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The Reynolds Hoisting Machine.

(WITH SUPPLEMENT.)

WE print in a supplement this week an illustration of the Reynolds Hoisting Machine for mines and all hoisting work. Its general design is that of a continuously acting engine, geared direct to a main shaft, which carries a fly-wheel, and also a winding drum, and large cog-wheels. The drum revolves loosely on trunnions independent of the shaft. The motion from the engine to the drum being transmitted through a pair of friction gears to an intermediate shaft, and from this intermediate shaft to the drum. The motion of the main shaft does not therefore communicate itself directly to the drums, but by engaging the friction wheel on the second shaft, with another placed on the engine shaft. Lowering is performed by gravity, the drums being provided with powerful brakes, which control them independently of the engine.

This disposition permits the extension of the hoisting apparatus to any desired capacity. Our illustration shows two drums placed end to end, but we have heard of one establishment where seven drums are run by one engine. This is an important advantage. In prosecuting the work of large quarries, of warehouses, railway cuttings and similar undertakings, it is often desirable to add supplementary hoisting to that of the main point of extraction, and the disposition exhibited in our illustration, shows how this can be done expeditiously and cheaply. The hoisting rope can be carried in any direction by snatch blocks, and the engine may haul and hoist, load up and discharge, all at once and in different directions, by merely employing one man to perform the necessary work at the brake, during the time required for each kind of work. When the work is finished, the machine is thrown out of gear and does not require his further attention.

The friction gearing has the advantage of noiseless work, without shock, and consequently with a minimum loss of power. Belting is entirely avoided and the disposition of the different parts is so taken, that no intermediate shafting is required, the motion being taken direct from the main shaft.

The engine employed for driving the machinery, is the well known Rider Cut-off Engine, with which our readers are already acquainted. This gives the greatest economy of steam, as well as simplicity and durability of construction. In all its details, the hoisting machine which we illustrate, is of excellent design. It has been introduced into several iron mines in the Lake Champlain and other regions, and has found favor in regions which, like some in South America, are far from machine shops and where a durable and simple mechanism is therefore an absolute necessity. It has proved to be well fitted for heavy work and adapted to the most varied wants. Messrs. REYNOLDS & FISH, Mining Engineers, 23 Park Row, New York, may be addressed for further particulars in relation to it. The Delamater Iron Works, foot of 13th street, North River, are the builders.

THE WARING ROCK DRILL.

The Waring Rock Drill.

THE field of intelligent invention offers no more interesting subject for study than that of machine drills for piercing rocks, and certainly there can be none more important, or more actively pursued. A rock drill seems to be merely a steam engine that does *not* turn a crank, and an uninitiated person might suppose the design of such a machine to be one of the simple problems of mechanical engineering, but he would be decidedly mistaken. The perfect drill is the simplest machine that will perform the required work with certainty and economy, but the motions necessary to accomplish this work are numerous and delicate, and the task of devising the best mechanism for the purpose is so difficult that many years have already been spent in it. That they have not been fruitlessly spent but that, on the contrary, a very remarkable degree of simplicity and certainty of function has been reached will be plain to any one who will study the construction of the Waring Rock Drill, a perspective view of which is herewith presented.

We have said that the drill is a steam engine that does not turn a crank; that is, the reciprocal motion of the piston is preserved and by placing the machine so near the rock that the forward movement is interrupted just before it would cease by the operation of the valves, the rock receives a powerful blow, and the edge of the drill cuts a groove in it. By giving the drill a partial revolution and striking another blow, a new groove is made near the other, and the small wedge of rock between the two is split off. As this result is rapidly repeated the rock is cut away, and the drill must be pushed forward, so as to act with undiminished force upon the new face. To obtain the proper force the full steam pressure must be used through the whole stroke, and, as the reciprocal motion of the piston is entirely unrestrained by a crank connection, it is necessary to provide a very perfect and instantaneous valve action that will prevent the piston from striking the heads of the cylinder. In a rock drill, therefore, three distinct mo-

tions must be provided for: 1st, the valve action; 2nd, the feed; and 3d, the rotation of the drill. All of these must be so arranged as to answer certain positive requirements connected with each one, the parts must be durable and the arrangement must not be complicated.

The Waring drill fulfills all of these requirements in a very beautiful manner. It consists of a cylinder which is made several times as long as the stroke, for the purpose of providing within it space for the several parts. The cylinder, therefore, acts both as a steam cylinder and as a housing for the mechanism, of which only two parts project, one being the piston rod, and the other the feed screw. The valve is placed in the center and works diagonally across the cylinder, instead of in the direction of its length. The valve has a boss which reaches down through the wall of the cylinder and fits in an inclined slot cut in a piece of brass which is let into the piston. This slot has curved ends, so that when the end of the stroke is reached the valve is thrown sideways, and the course of the steam is reversed. The action is positive, the mechanism free from springs, and as the movement of the valve depends upon the position of the piston, reversal must take place when the piston arrives at the proper spot. Nothing more accurate and certain could be conceived, but experience has shown that a good valve action is not the only requirement for the control of the piston. The piston with its heavy drill rod often stands in a vertical position, and, working at a high speed, it gains a living force which is independent of the steam pressure and continues when the latter is removed. It might, therefore, strike the cylinder head in the instant of time occupied in reversing the valve, but this is prevented by cushioning the piston with steam, and as a further safeguard a rubber cushion is also placed within the cylinder head. These provisions for safety are so effective that it is not necessary to run the Waring drill down to the rock before starting. The machine can start at any distance from the rock and work its own way down without injury and without striking the head. In fact, it has been run 15 minutes with a man turning the feed back as fast as the machine carried it forward, so that the rock was not reached at all.

Next in importance is the feed, which is entirely automatic. The steam cylinder is placed in guides and held in position by a screw working through a yoke fastened to the guides. On this screw is a face ratchet, the teeth of which engage the teeth of a similar ratchet which is placed on a tube that runs into the piston. This tube has slots with curved ends, and in these slots work pins driven through the piston. So long as the drill strikes a good blow these pins run up and down the straight part of the slots, but when the hole has been cut away enough to let the pins down to the curved part of the slots, the tube receives a partial revolution. The ratchet on the tube acts on the corresponding face ratchet and turns it a little way down the screw by which the cylinder, with all its attachments, advances on the guides and the drill is brought up to the rock. This feed motion requires no adjustment. It is always right, acts fast in soft rock, and slow in hard rock.

The turning of the drill is accomplished by a mechanism quite similar to the feed, but placed at the other end of the cylinder. It is hardly necessary to describe it as this, though a necessary part of the drill, is one of the least difficult to provide. At each back stroke of the piston, the drill makes a 1-15th revolution.

This description, which cannot be perfectly clear without a sectional drawing, is sufficient to show that the motions are all accomplished by positive and direct means. Durable, but not powerful springs keep the two face ratchets together, but the motions are all communicated by inclined or curved surfaces. The drill is every way a beautiful piece of mechanism, its construction is simple, its parts all carefully housed, and it has every provision which the history of rock drills has proved to be necessary. It is made by the WARING ROCK DRILL CO., whose office will, after May 1st, be at 835 Broadway, New York, previous to which date the drill can be seen at the corner of Centre and White streets.

The Geology of New Jersey.*

That part of the work done by the New Jersey survey, which is described in the Report for 1873, covers many details of general importance. The Azoic region, comprising about 900 square miles, has been mapped out in four belts named as follows, beginning on the south east and going toward the northwest: Ramapo Belt, Passaic Belt, Musconetcong Belt and Pequest Belt. Unfortunately no means of identifying the rocks of these belts with the Azoic rocks of other parts of the country have yet been found, and the precise geological divisions therefore remain unrecognized. The rock is mostly syenitic gneiss, with some crystalline limestone and magnetic iron ore. The Report says that "the only difference between this ore and the other rocks among which it is found, is that its beds are limited in extent, either thinning out or gradually changing in character, until the ore is entirely replaced by rock—though this may not occur in hundreds, or even thousands, of feet." Much interesting information is given about the geology of this important region, but as Prof. SMOCK of the Survey read a paper at the late meeting of the Institute of Mining Engineers, which will soon be published in this journal, we will not anticipate his complete treatment of the subject by any fragmentary allusions to it. The output of iron ore is given according to various estimates at different periods, as follows:

1855	100,000 tons	1871	450,000 tons
1864	226,000 "	1872	600,000 "
	275,000 "	1873	665,652 "

* Geological Survey of New Jersey. Annual Report of the State Geologist for 1873. Trenton, N. J.

A list of the iron mines in the State is given with notes of occurrence, condition, etc., which will prove a valuable directory to the mining interest of the State, so far as its permanent features are concerned. More than 200 mines are mentioned or discussed. The richness of the famous zinc ores found in New Jersey, stimulates owners of land to keep a sharp look out for "indications," and the geologist reports that he is constantly receiving specimens from new localities, but, so far, no new ores of value have been found. Boulders from the Franklin or Sterling veins are found in the gravel for several miles south and southwest from the place of their formation, and fragments of the same ore are frequently brought in from quite distant localities, where they have probably been carried by accident or with fraudulent design. The Report speaks discouragingly of copper mining in the State, and ridicules the discoveries of silver which are reported. Gold is found, but in too small quantity to form an ore. One of the most interesting chapters in the Report is that on "Searching for new beds of iron ore," and it gives the main facts of the geology of these ores so tersely and clearly, that we transcribe a part of it here:

1. *The workable beds of magnetic iron ore are all in the Azoic rocks.* Strong local attraction is not uncommonly found in the trap rocks of our State, and some attempts have been made to work them, but as yet without success. The ore in the trap is disseminated everywhere through it, but it has not yet been profitably separated from the rock.

2. *The magnetic iron ore is all found in beds which are interposed between the layers of the gneiss, and are comformable to them.* It is never in veins which cut across the layers of the rock; it has no gangue of calc spar, fluor spar, quartz or any other mineral different from the common minerals of the adjacent rock layers; it has no rock walls by which the ore is separated from the adjacent rock, which at all differ from any other two adjoining beds of rock which are separated by a seam of softer or otherwise different material, and in many cases there is no seam at all, but the ore adheres firmly to the rock; and there are many instances in which it passes into rock by a gradual diminution of magnetite in the mass. These beds of magnetite, like the rocks among which they occur, are highly inclined or almost vertical. In this respect they have an accidental resemblance to true veins, and this has led to their being commonly called *veins.* And, understanding that the word vein simply means a flattened mass of ore standing on edge, the name may be accepted without conveying a wrong impression.

3. *Since the layers of ore and rock stand on edge, it necessarily follows that the ore must come to the surface of the rock.* The rock surface is usually covered with loose earth and boulders, and of course this outcrop of ore is hidden from sight. But it is only necessary to remove the loose earth in order to determine whether the ore is there. Blasting out or sinking expensive shafts in rock is not necessary, and such expense should not be incurred in ordinary explorations.

4. The direction in which the beds of ore *range* is the same with the strike of the rock, and the extension of worked beds of ore is frequently proved by ranging, and many successful searches for new openings upon ore have been made in this way.

5. *In ordinary cases where the surface is covered with loose earth, it is common to search for ore with a magnetic needle or a miner's compass,* and for preliminary examinations it is now the chief reliance. In using this instrument, much practice is required; but this joined to good judgment, gives indications of the presence of ore, which are almost infallible.

The subject of magnetic surveys is further elucidated by three maps of such surveys, and also by the following notes:

Indications. It is well-known that if a bar of iron is held perpendicularly, it acts like a magnet; its upper end attracting the north end, or pole, of the compass needle, and its lower end the south pole. If the upper end of the bar is leaned over towards the south about 25° in this latitude, its magnetic properties are developed most powerfully; and, on the contrary, if the bar slants away from this position, it shows its magnetism less strongly, and when it lies horizontal in an east and west direction, it shows no magnetism at all. This magnetism in the iron bar, which is developed simply by its position, is considered to be due to the influence of the earth. Magnetic iron ore is susceptible of being made into magnets by the influence of the earth, the same as the iron bar. The beds of ore are like great flattened bars of iron which stand on end, with their upper extremities slanting towards the south-west, and their lower ends extending down into the earth towards the north-east. Their upper ends, which, of course, are those under the soil, but nearest the surface, should attract the north end of the needle, and this it always does, if the break or offsett is near enough to the surface to move the needle in any way.

Again, if a bar of iron is laid down with its ends pointing north and south, the north end will attract the south pole of the compass needle, and the south end of the bar will attract the north pole. In crossing a vein of magnetic ore from the south towards the north, the north pole of the needle is attracted during all the first part of the passage, but just at the place of the passing off the vein, the south pole of the needle is attracted; a short distance further all attraction ends, all of which is quite in accordance with the experiment with the bar of iron. The attraction which draws the north pole is often spoken of as *positive;* and that which draws the south pole as *negative;* and in writing, these attractions are expressed by the algebraic signs, plus and minus.

The indications from the magnetic needle, in searching for ore, as it usually occurs in our State, may be stated as follows:

An attraction, which is confined to a very small spot and is lost in passing a few feet from it, is most likely to be caused by a boulder of ore, or particles of magnetite in the rock.

An attraction, which continues on steadily in the direction of the strike of the rock, for a distance of many feet or rods, indicates a vein of ore; and if it is positive and strongest towards the southwest, it is reasonable to conclude that the vein begins with the attraction there; if the attraction diminishes in going north east, and finally dies out without becoming negative, it indicates that the vein has continued on without break or ending until too far off to move the compass needle. If on passing towards the north east along the line of attraction, the south pole is drawn down, it indicates the end of the vein or offset. If, on continuing further still in the same direction, positive attraction is found, it shows that the vein is not ended; but if no attraction is shown, there is no indication as to the further continuance of the ore.

In crossing veins of ore from south-east to north-west, when the dip of the ore and rock is as usual to the south-east, positive attraction is first observed to come on gradually as the ore is nearer and nearer to the surface, and the northwest edge of the vein is indicated by the needle suddenly showing negative attraction

just at the point of passing off it. This change of attraction will be less marked, as the depth of the vein is greater, or as the strike is nearer north and south. The steadiness and continuance of the attraction, is a much better indication of ore than the strength or amount of attraction is. The ore may vary in its susceptibility to the magnetic influence from impurities in its substance; it does vary according to the position in which it lies—that is, according to its dip and strike; and it also varies very much according to its distance beneath the surface.

Altogether this volume of the New Jersey Report, bears out the excellent character of its predecessors, as one of the most valuable authorities upon the subject of magnetic ores, and also as one in which the necessities of mining men, the wishes of the citizens in general and the good of science, all receive conscientious attention.

E. S. Wheeler & Co.'s Scotch Pig Iron Circular.

LIVERPOOL, March 20th, 1874.

HEREWITH we have the pleasure to hand you Statistics of the Scotch Pig Iron Trade. We embrace the present opportunity to make some remarks which may be of interest to our friends in their inquiries into the causes of the remarkable fluctuations which have characterized the trade during the past three years. For a few years preceding 1871, the demand for iron had been gradually increasing, the increase in production being in about the same ratio. Soon after the cessation of the Franco-German war, however, a marked increase in the demand was felt; Germany then becoming a customer of much greater importance than for many years previously. The increase in the demand, however, was not from Germany alone, for at this period the United States, as well as the other large foreign customers, were increasing their demands, and the business of the year resulted in a reduction of 175,000 tons in the stock. At the beginning of the year the stock in Scotland was 665,000 tons, which fell to 490,000 tons at the end of the year. The production of 1871 was 1,160,000 tons. General mixed brands opened in January at 51s. 6d., and advanced gradually throughout the year, closing at 70s. in December.

In the early part of 1872 it became evident that the great and increasing demand would severely tax the producing capacity of the works to meet it. Few persons could have anticipated, at this time, the remarkable prosperity which was to characterize the business of 1872. A large increase in the volume of business was observable in the early part of this year. The workmen, now realizing the extraordinary improvement which had taken place, made demands for higher wages; these demands were acceded to at first, but they soon became so great that the employers resisted them, and owing to the dissatisfaction which existed on the part of the men, considerable difficulty was experienced in keeping the works regularly and fully employed. The demand for iron during the Spring and Summer increased largely, while prices continually advanced, and at mid-summer the shipments and consumption were greatly in excess of the production, and the stock was largely drawn upon.

The labor question was continually increasing in importance; the men by their action at this time considerably restricting the production. The men having been successful in their earlier efforts, felt their power, and by their unions and combination attained an influence to which they had never before aspired. The question of how to deal with labor in its new and changed relation became so serious in the opinion of many people, that they were prepared to witness even higher prices than those ruling at mid-summer. The demand, however, fell off considerably at the last of the year, and prices receded in proportion. General mixed brands opened at 74s. 7d. in January, advanced gradually until they reached 129s. 2d. in September, declined to 97s. 7d. in November, and closed at 107s. in December. The stock, which was 490,000 tons, January 1st, was reduced to 194,000 tons at the end of the year. The production of 1872 was 70,000 tons less than the previous year. In consequence of the falling off in the demand for iron in the latter part of 1872, the masters attempted in December to reduce the wages of the men. The men were unwilling to accept any reduction and a strike ensued.

The year 1873 opened with nearly one-half the furnaces out of blast. The men stubbornly resisted the reduction of wages, and, after a contest of about six weeks, work was resumed at the old rate of wages, the masters having been unsuccessful in their attempt to reduce them. The men, by the aid of their unions, were better organized than ever before, and it was owing principally to their combination that they were successful in this case. It was during this strike that the masters became aware of the power which had been acquired by the men through their organizations, and became sensible that, in the settlement of any labor difficulty, they must assume new methods of action suitable to the altered position in which the men had placed themselves. The continuance of the strike in the early part of 1873, when the demand was but moderate, caused a steady advance in prices until March, when the works being again in nearly full operation, prices declined considerably, and from April until the end of the year there was a gradual and easy decline. The great demand for iron, which was first felt in 1871, culminated apparantly in September, 1872, and since the latter date there has been a steady falling off in demand. It became evident that the large trade of 1872 could not be sustained. General mixed brands opened at 129s. in January, advanced to 138s. in February, then steadily declined to 107s. in August; advanced to 115s. in September, and declined to 106s. 3d. in December. The production for the year was 993,000 tons, a falling off of 97,000 tons as compared with the previous year, this decrease being due to the strike in the early part of the year. The stock in Scotland at the end of the year was 120,000 tons.

At the beginning of 1874 the demand was small, and up to this time there has been no improvement, the shipments being considerably less than last year, and very much less than for the same time in 1872. Since the first of the year the works have been regularly in blast, and the demand being so small, stocks are accumulating. The masters not anticipating any immediate improvement in the demand, gave notice to their men of a reduction of 20 per cent. in wages. The men have decided not to accept the reduction, and at the time of writing it appears as if many of the furnaces would have to be put out. The labor difficulties which the masters are now encountering will prevent a great and sudden decline in the immediate future, but it is evident that the trade is entering upon a state of depression, and that we shall not soon see such high prices as we have experienced the last two years. The accounts from Germany, the United States, and the other foreign customers do not point to any increase in their wants, and with the present small demand, prices cannot be maintained. Before the end of the year prices are likely to be considerably lower than at present unless the demand improves.

It should be borne in mind that the relations between capital and labor have greatly changed in the last three years, and it remains to be seen whether the masters will be as successful in reducing wages during a depressed state of trade as the men were in advancing them under conditions favorable to themselves. If the demand continues to fall off the masters will seek to reduce wages, and it seems probable that the men will offer resistance at every step, and they are in every way better prepared for a struggle than they have been in former years.

STATISTICS OF THE SCOTCH PIG IRON TRADE.

PIG IRON WORKS.	Furnaces built.
Gartsherrie	16
Calder	8
Govan	5
Langloan	8
Carnbroe	6
Summerlee	8
Monkland	9
Coltness	12
Shotts	4
Castlehill	3
Clyde	6
Quarter	4
Glengarnock	14
Eglinton	8
Muirkirk	3
Lugar	4
Portland	6
Dalmellington	8
Wishaw	3
Carron	4
Kinneil	4
Lochgelly	4
Lumphinnans	2
Almond	3
Bridgeness	2
Total	154

	Production. tons.	Miner's Wages. per day.	Shipment and Home Consumption. tons.	Stock, Dec. 31st. tons.
1854	754,000	5s. 0d.	860,000	132,000
1855	820,000	4 4	847,000	130,000
1856	820 000	4 3	842,000	90,000
1857	920,000	4 0	843.000	196,000
1858	980,000	3 0	810 000	340,000
1859	960,000	3 3	915,000	390,000
1860	988,000	3 6	903,000	460,000
1861	1,050,000	3 0	927,000	566,000
1862	1,080,000	3 6	970 000	666,000
1863	1,180,000	3 6	1,105,000	763,000
1864	1,160,000	4 0	1,156,000	760,000
1865	1,164.000	4 6	1,272,000	652,000
1866	994,000	5 6	1,136,000	510,000
1867	1,031 000	4 9	1,068,000	473,000
1868	1,068,000	3 9	973,000	568,000
1869	1,150,000	3 9	1,098,000	620,000
1870	1,206,000	4 0	1,161,000	665,000
1871	1,160,000	4 6	1,335,000	490,000
1872	1,090.000	7 3	1,386,000	194,000
1873	993,000	8 6	1,067,000	120,000

PRICES OF NO. 1 IRON, DECEMBER 31ST OF EACH YEAR.

	Coltness. per ton.	Gartsherrie. per ton.	Glengarnock. per ton.	Summerlee. per ton.	Eglinton. per ton.
1854	....	69s. 0d.	....	....	....
1855	....	....	....	....	....
1856	....	78 0	75s. 0d.	....	72s. 6d.
1857	55s. 0d.	57 0	54 6	....	....
1858	56 0	58 3	55 0	....	55 0
1859	59 9	59 9	59 0	....	56 6
1860	55 0	55 0	53 0	....	48 6
1861	53 0	58 0	50 3	48s. 0d.	49 0
1862	57 0	57 6	54 0	53 6	53 0
1863	68 0	68 9	66 0	66 0	64 0
1864	53 0	55 6	53 0	51 0	50 3
1865	69 0	68 6	65 0	64 0	61 6
1866	63 0	66 0	61 0	58 0	57 0
1867	59 0	60 0	57 0	57 6	53 6
1868	59 6	59 6	55 6	57 0	54 0
1869	64 0	64 3	60 0	61 0	57 9
1870	60 0	60 0	54 6	56 0	52 0
1871	86 9	86 9	83 0	85 0	74 6
1872	145 0	140 0	132 6	135 0	123 0
1873	115 0	112 6	110 0	109 6	106 0

Cost of Making Iron in Jackson County, Ohio.

The following items of cost are taken from the books of one of their principal furnaces of this district, and are given as the cost per ton of pig iron:

Average cost of ore at the furnace in 1873	$2.71
60 bushels of Jackson Coal @ 4½ cents	2.70
¾ ton Limestone	75
Labor estimated	3.00
Interest and repairs	2.00
Contingencies	4.16
Total cost per ton of pig iron	$15.32

There are 10 blast furnaces on the line of the Selma, Rome and Dalton R. R. in Alabama and Georgia, namely: 7 furnaces now in blast; 1 completed and ready to blow in; 2 in process of building.

THE ENGINEERING AND MINING JOURNAL.

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THE report of the Commissioner of Mining Statistics for the year 1872 (rendered February, 1873,) is at last ready for distribution ; and Congress has wisely put several hundred copies at the disposal of the Commissioner. These copies will be given (so long as the supply shall last) to persons interested in the subject, who make application at this office. Those who apply in person will receive the volume at once. Those who apply by letter should enclose 50 cents, to cover the expense of clerk-hire, wrapping and postage, involved in the distribution.

Mining Legislation in Congress.

BETWEEN March 18 and April 2, a great deal of interesting and heated discussion took place in the House of Representatives on subjects connected with mining law. We shall endeavor to outline the debate in such a way as to explain its bearings and results.

The Committee on Mines and Mining reported adversely a number of bills, which were laid on the table. Among these was a bill to repeal the fifth section of the act of 1872, which provides for the regular annual expenditure of certain amounts of money in improvements, to maintain possessory title of mining claims. The unconditional repeal of this provision would be, in our opinion, a serious mistake, and we are glad the attempt was defeated by the committee in the House.

The bill for the establishment of an assay office at Helena, Montana, was removed from the Committee on Mines and Mining and referred to the Committee on Coinage, Weights and Measures. We hope it will pass.

A bill relating to placer mining lands in California was read a first and second time and referred to a Committee of the Whole for more thorough discussion. Its principal features are the fixing of the price of placer mineral lands outside of railroad grants at $1 25 per acre; the assimilation of methods of procedure for obtaining patent for placer lands to those employed for agricultural lands; the increase of the claim which may be taken up by a single person or company, from 20 acres to 160 acres; a provision for the making of *ex parte* affidavits and proofs required by law before any officer authorized to administer oaths in the land districts where the claim may be situated, or, out of such district, before the judge or clerk of any court of record; and last, but most important, a provision that public lands in California, other than those containing mineral veins or coal, shall not be excluded as mineral from the operation of the pre-emption or homestead laws, unless it shall be shown that *bona fide* mining claims exist thereon, or that the land is necessary for outlet or other mining easements. This last provision practically reverses the rule as at present administered by the Land Office, according to which it is necessary for the claimant of agricultural lands to satisfy the proper officers that the lands contain no valuable mineral deposits—in other words, to prove a negative. According to the proposed regulation, the absence of positive proof would be held sufficient. We are under the impression that this is really enacting into law what was formerly, under Mr. WILSON, the common practice of the Land Office. The subject is a difficult one. We do not deny that the proposed rule opens the door to possible encroachments upon the rights of miners, by the location as agricultural lands of areas that are valuable in themselees by reason of their mineral contents, or indispensable as outlets of tailing reservoirs to the working of neighboring claims. On the other hand, it is certain that the present rule may and does involve hardship to *bona fide* agricultural claimants. The reduction of the price of placer lands to an equality with that of agricultural lands, would remove undoubtedly one great cause of abuse. It would no longer be to the interest of any person or company to acquire lands as agricultural, for the sake of saving a portion of the price. Whichever rule is adopted, we have confidence that Mr. DRUMMOND, the Commissioner of the General Land Office, will so administer the law as to secure substantial justice, and remove from both the great industries of California unnecessary hindrances.

Another important bill reported from the Committee on Mines and Mining and referred to the Committee of the Whole, was that of Mr. KENDALL, to provide for a Board of Commissioners to report a system for obtaining water for mining and agricultural purposes in the valleys of the State of Nevada. Whether such a Board should report favorably or unfavorably concerning the feasibility of the project, decisive information on the matter would be of the highest value to the country. The reclamation of desert lands is a peaceful conquest, more glorious and more beneficial to the people than the acquirement of new territories by war.

Another bill, reported by the same Committee and passed by the House, exempts the States of Missouri and Kansas, as Michigan, Wisconsin and Minnesota have already been exempted, from the application of the mining act of 1872 to the public lands within their borders.

The most prolonged and heated debate was that which arose upon the Senate bill supplemental to the act of 1872. This bill provided that applications for patents which had been filed with due legal notice, and without the appearance of adverse claimants, should be carried forward within one year to final proof and payment. It also permitted affidavits and proofs to be taken outside the land district, before the clerk of any court of record. The House Committee reported an amendment furnishing additional safeguards to the latter provision. This amendment was agreed to without an objection. Two or three other amendments were offered for the purpose of forbidding the act to be construed to repeal or impair the provisions of the Sutro Tunnel act of 1866; and although no opposition was made to a simple proviso for that purpose, a spirited debate took place over an amendment offered by Mr. NEGLEY, which goes much further. Before stating this amendment, it is necessary to recall some facts explanatory of the present relations between the Sutro Tunnel Company and the companies mining on the Comstock lode.

It will be remembered that the Sutro Tunnel act grants to Mr. SUTRO the right of way and other privileges for his tunnel, recognizes certain rights acquired by him by virtue of contracts with many of the Comstock companies, extends those rights over all the companies, and provides that all the patents issued for mines on the lode, shall contain clauses reserving the vested rights of the tunnel. What those rights are, and to what extent they have been affected by events since 1866, are questions for the Courts to decide. The attitude of Congress on the subject has been repeatedly declared. It has been decided more than once that the provisions of the Sutro Tunnel act must be maintained, and that whatever may be the decision of the Courts, defining Mr. SUTRO's rights, those rights will not be done away by legislation.

Meanwhile the companies on the Comstock lode, holding that the claims of the tunnel have been forfeited by non-performance of the conditions of the original contract, have opposed, by every possible means, its successful prosecution. Most of them have declined to apply for patents, and others, after taking the preliminary steps, have declined to receive the patents containing the obnoxious clause in favor of the Sutro Tunnel. Apparently they are not sure that the courts would sustain them in their position, and consequently they endeavor to fortify it in other ways. The attempts which they have made to do this in Washington have reacted very unfavorably to their cause. The passive opposition, consisting in a refusal to accept their patents, is something which, under the existing laws, they have a perfect right to maintain. Those of them which have already made application for patents would, however, be obliged, by the Senate bill just referred to, to accept the patents within a year, or else to go back entirely to the position of possessory claimants, sacrificing the advantage of all proceedings hitherto taken for patents, but not sacrificing their possessory title. On the other hand, those which have not taken any steps to obtain a patent would be, by the Senate bill, entirely unaffected.

Mr. NEGLEY's amendment was intended to force all claimants of mines on the Comstock lode to make application for patents within six months, and, in the absence of adverse claimants, make final proof and payment, and receive the patents within six months more, the penalty for default being the liability of the mines to re-location by other parties, that is to say, *the entire annihilation of the present possessory titles.* In cases where patents have already been issued, it commanded an acknowledgment of the receipt of the patent, subject to the condition which it contained, within ninety days, under the same penalty. This provision was vehemently opposed by several members, on the ground that it would involve great hardships to prospectors, particularly east of the present Comstock mines, since such persons could not know positively whether their claims were on the Comstock vein or not, and would be forced to apply for patents upon property which might be valueless or defective in title. The majority of the com-

panies on the recognized Comstock lode itself are not paying profits; and, in many cases, it was urged, their owners or claimants might be wronged by a compulsory provision of this kind.

Mr. NEGLEY, to meet these and other objections, changed the amendment by introducing twelve months instead of six in one place, and twelve months instead of ninety days in the other; and also by adding a proviso that unproductive mines on the Comstock lode should not be required to secure patents until they had become productive, but should report annually the progress of development in their mines to the Registrar of the Land Office. These modifications did not meet the main objection to the amendment, namely, that it was imposing upon the Comstock mines a demand not made on any others, and violating the possessory rights of the companies hitherto invariably recognized by the United States. It was not denied that the Government has the power to force any claimants on the public lands to make applications for patents; but this power has never been exercised by the Government. The proposition to exercise it with regard to all the mines of the West, embodied in the bill of Mr. WARD, which we recently criticised, has been received with universal disfavor. For our own part, although the amendment of Mr. NEGLEY was far less objectionable in its final form than when he first proposed it, we are still compelled to consider it as unwise, and to regret that it was insisted upon. The House, however, supported it, and on the test vote refused to lay the bill upon the table by 115 to 95. The bill was then passed.

That this is a triumph for Mr. SUTRO, as we remarked last week, there can be no doubt; but it is questionable whether the victory will be a real benefit to his enterprise. The bill must now go back to the Senate, where the new features engrafted upon it will meet with a determined opposition, strengthened, moreover, by a decided popular sentiment which has been aroused in Nevada. We cannot see that Mr. SUTRO's actual rights are at all increased by the bill. They must be finally settled in the courts; and while we applaud the determination of Congress to protect him against attempts, however disguised, to secure by legislation what his opponents seem to fear to put to a legitimate test, we are sorry that his friends have made use, in his behalf, of so questionable a measure as the compulsion of possessory owners to obtain patents. If the principle were a good one, it ought to be universally applied. Since we have already denounced it as a bad one in its application to the whole country, we cannot consistently approve its exceptional application to the Comstock lode.

These views do not in any way change our invariable attitude towards the Sutro Tunnel. We believe in it as an engineering work; we believe that Mr. SUTRO can, and will, carry it through, and that it will be a great benefit to the mines and to the country. If this was our position when the tunnel had barely been begun, and when the occurrence of valuable ore bodies in depth on the Comstock was a matter of faith, not sight, it is a position which we are not likely to change, now that 6000 feet of the tunnel have been constructed, $2,000,000 expended in work, buildings and machinery, and the developments on the Comstock lode have surpassed those of the palmiest days of its earlier history.

CORRESPONDENCE.

Steel Making at Troy.

TROY, N. Y., April 4, 1874.

TO THE EDITOR: SIR—Accompanying this, you will please find a statement of the product for this week of these works. As you will see, this leads the world, and we are now ahead on work for a week as well as 24 hours.

Yours, truly, ROBERT W. HUNT, Sup't.

The blast was put on the cupola at 5:55 A. M. Monday, and the last cupola bottom dropped at 1:15 P. M. Saturday. The first heat was blown at 7:50 A. M. Monday; the last one blown and in the ladle at 1:45 P. M. Saturday, making the total number of hours worked $127\frac{5}{6}$ and producing $971\frac{3}{2}\frac{5}{2}\frac{0}{4}\frac{0}{6}$ tons of steel ingots. The work was done by two turns of hands, and no extra men were employed. The product for each day was:

Monday,	day turn,	15	heats,			
"	night "	22	"	37 heats in 24 h. 35m.		
Tuesday,	day "	14	"			
"	night "	19	"	33	"	" 24 h.
Wednesday,	day "	18	"			
"	night "	20	"	38	"	" 24 h.
Thursday,	day "	19	"			
"	night "	17	"	36	"	" 24 h.
Friday,	day "	15	"			
"	night "	25	"	40	"	" 24 h.
Saturday,	day "	11	"	11	"	" $7\frac{1}{4}$ h.

The converter bottoms gave an average of $7\frac{1}{4}$ heats. The resulting steel was of the best quality. For the week ending March 28th, these works made 188 heats.

Lead and Silver Smelting in Chicago.

BY JAMES L. JERNEGAN, JR., M. E.*

CONCLUDED FROM PAGE 211.

Where does this lead go? is now the question. My answer is: First, some of the ore (it generally being in a sandy state) can be carried up the chimney by means of the strong draft passing through the furnace; and the longer the time is before the ore begins to agglomerate, the greater is the amount that can be lost in this manner; second, by volatilization, as lead volatilizes at all temperatures above its fusing point, (334°C.); and, third, by forming with the slag a silicate of lead, and also by becoming entangled in the same in a metallic state, it not having time to settle down to the bottom of the pot into which it runs when the furnace is tapped, either on account of the slag being cooled off too rapidly or because it is too pasty or, in other words, is not always a singulo-silicate. To remedy the first case, such ores as are in such a finely divided state, should be agglutinated with milk of lime before entering the furnace; for the second case, about all that can be done is to provide the furnaces with well arranged condensation chambers; and as for the third case, the best thing to be done would be to smelt the ore in shaft furnaces, instead of in reverberatory furnaces; but even in making use of the reverberatory furnaces, the entanglement of the lead in the slag could be prevented by forming a singulo-silicate and also by allowing the charge, when tapped, to run into one large pot only, instead of into three small ones, as is the case at present.

By allowing the charge to run into one pot only, the slag would take more time to cool off and would thus give such lead as had become entangled in the slag more opportunity and time to settle to the bottom of the pot. I have at times seen parts of a slag or lead stone, as it is called in this case, literally full of metallic globules of lead, from the size of a pea up to that of an egg. Such slag, of course, is put through the furnace again. What little matte is formed is generally so intimately mixed with the slag that one would not be able to say whether there were any or not.

I am sorry to say that the assay value in silver of the ore worked upon the particular day, as made use of above for an example of the charges put through a reverberatory furnace, has slipped my memory, and I have no means of finding it out; consequently I have not been able to follow up the silver in its passage through the furnace, as I have done with the lead. This is much to be regretted. However, where metallic lead is found in the slag, there must also be silver with it, and this has been proved by numerous assays.

By looking at the analysis again, we find that the ore contains 3.37 per cent. of sulphur, and we will call the average five per cent. Five per cent. of 6380 lb. of ore=319, and as 16 parts of sulphur require 28 parts of iron, 319 parts would require 558 of iron, which is less by 342 lb. than 900 lb., the amount used; therefore, according to the case supposed, 342 lb. of iron more than is necessary, is daily used in each of the furnaces, and as a pretty good price is paid for the iron borings, as well as for carting the same from the city to the works, this waste of material becomes a source of considerable financial loss within a year's time, equal in this case to the cost of 342 lb. of iron borings multiplied by 365, the number of days in a year, which is 124,830 lb.=62.4 tons per furnace. Another source of useless expenditure is the salt used, which is supposed to act as a flux; but as every metallurgist knows, it only rises to the top of the charge and there remains. Every assayer observes this every time he makes a crucible assay of ore. Some claim that the salt is not used as a flux, but merely serves the purpose of a covering or blanket to the molten charge, but then cinder, which is produced in large quanties at all metallurgical establishments, would serve the same purpose, and besides that would cost nothing; at the same time it would not be influential in the volatilization of lead, as salt undoubtedly is, by forming a chloride of that metal, which is very volatile.

A charge remains in the furnace for about the space of 5 hours, when the furnace is in good condition and running order. The manipulation is as follows, viz.:

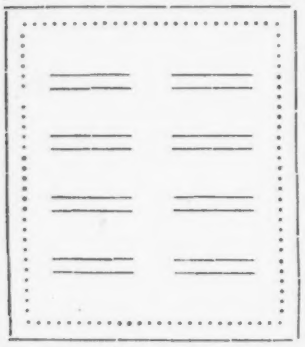
As soon as the charge has been shoveled into the furnace through the side doors, it is spread out evenly over the surface with an iron rabble, the furnace doors are then closed, and the smelter urges his fire to its utmost, in order to melt down the charge as quickly as possible. As soon as the charge has become fluid, one of the furnace doors is opened and the charge is rabbled, in order to knock off all accretions of unfused matter that may be adhering to the sides and bottom of the hearth; the door is then again closed. The fire-place is kept continually supplied with fuel. The process is said to be finished when the slag is in a thin fluid state. As soon as this period is reached, the charge is again thoroughly rabbled, and about 15 minutes afterwards the furnace is tapped, and the molten charge flows out into a large cast iron pot, from which, when full, the slag flows over into another pot of a smaller size at its side. There is also a third pot by the side of the second, in case the charge should be so large as to fill the first two. While the slag is still hot, an iron staple is sunk for about $\frac{3}{4}$ of its length into the same, and the slag is allowed to solidify around it. When the slag has become solid, it is lifted from the liquid lead in the bottom of the pot by means of a hook passed through the staple in the slag. The hook is fastened to an iron chain which runs over a pulley, and the slag is hoisted out of the pot, placed upon a two-wheeled wagon and carted to the dump. Here, the block is broken open with a sledge-hammer, and if it contains any visible particles of metallic lead, the rich parts are separated from the rest for a second treatment. The argentiferous lead in the bottom of the pot is ladled out into cast iron molds.

Of the four reverberatory furnaces at the works in South Lynne, only two are generally kept running at a time, while the other two are in repair.

The furnaces, when new, absorb much lead and leak badly. At one time several tons of lead were melted out from the hearth of one of the furnaces, by building a wood fire underneath the hearth-plate. The hearth of the furnace rests upon an iron plate, which in its turn is supported by walls of masonry running crosswise, of which there are five or six. Now, when a furnace has finished its campaign, and is allowed to cool off for repairs, and is then heated up again for

* A paper read at the New York meeting of the American Institute of Mining Engineers, February 27, 1874.

further work, this iron plate is very apt to become warped. The plate, on becoming warped, is apt to displace the fire-brick composing the hearth, and in this manner the furnace becomes leaky. They were troubled the same way at the Swansea Works, and there the superintendent had an iron pan made, into which the iron plate of the furnace was placed, it resting on wrought iron bars, placed as shown in the accompanying sketch.



The continuous line represents the outer edge of the pan, and the dotted line the furnace plate, the other lines the iron bars upon which the plate rests in the pan. After the pan has been placed upon the walls of masonry, the iron bars are put in the pan in the order shown in the sketch and immediately over the walls of masonry. Upon these bars the furnace plate is placed, and the hearth of the furnace built upon it with fire brick. When the furnace is in work it is kept continually supplied with water, which keeps the iron plate at a constant low temperature, and in this manner it is kept from warping. The water in the pan evaporates quite rapidly, but is supplied with fresh, as fast as it goes off. Hearing that this arrangement worked veay satisfactorily, it was tried with one of the furnaces at South Lynne, and it worked to our perfect satisfaction.

LEAD SOFTENING.

As the silver-lead, or bullion, as it is generally called, from the reverberatory furnaces is very hard, containing always a large percentage of antimony and other impurities, it is first put through lead-softening or refining furnaces, before being treated with zinc for the extraction of the silver.

The furnaces are small reverberatories, having working doors on one side and a tap-hole opposite, below which there is an iron pot sunk into the floor of the building, large enough to hold the charge of lead which the furnace is able to put through at one time. This pot stands over a fire-place, and the lead can thus be kept in a molten state, as long as is required. There are three of these furnaces at South Lynne.

With bullion produced from the Emma ore, a large quantity of dross is formed in softening it, and the time necessary for the operation depends of course upon the purity of the bullion. The manipulation is as follows:

After the requisite number of bars of lead have been placed upon the hearth of the furnace by means of the charging iron, the furnace door is closed and the charge slowly melted down. As soon as any dross forms on the surface of the bath, it is removed from the furnace with an iron rabble. The workmen are very apt to pull out a large amount of lead in removing the dross by means of this very heavy implement, and if, as at Freiberg, in Saxony, a piece of green wood were used, fastened on crosswise to a long iron rod instead of the rabble, I think much less lead would be taken out with the dross. When the lead has become softened to the degree intended, the furnace man fires up for about 15 minutes quite energetically, the furnace is then tapped, and the lead flows out into the iron pot below. The surface of the lead is then skimmed clear of any oxyds that may have formed there, and it is then dipped out into molds. The dross produced is sent back to the reverberatory furnaces for reduction.

FIRST LIQUATION AND MIXING WITH ZINC.

The zinc furnace, as it is called in Chicago, is nothing more nor less than a liquation furnace, used for liquating the bullion, in order to free it from such impurities as may not have been eliminated in its passage through the lead softening furnace, previous to its being mixed with zinc for the purpose of desilverization.

The hearth of this furnace is formed by two iron plates, so placed together that they form a trough, and the trough thus formed has a slight inclination from the fire-bridge toward the tap-hole in the front part of the furnace. Immediately in front of the tap-hole there is a short spout of cast-iron, from which the lead slowly runs down into a cast-iron pot sunk into the floor. This iron pot is provided with a fire-place, in order to keep the lead in a fluid state. While the furnace is putting a charge through, a small fire is kept up by a few coals on the tap-hole spout, so that the lead will not congeal there. About 20 pigs of bullion compose a charge, and it requires between three and four hours to run a charge properly through. The higher the temperature in the furnace the quicker the charge is run through, of course, but then the liquated bullion is impurer than when run through more slowly. As lead fuses at 334°C., the temperature in the furnace should be kept as near this point as possible, in order to melt out the lead only and leave its impurities on the hearth in the form of dross. The fire, therefore, that is kept up, is a very low one and the fire door is generally left open. The lead trickles slowly down the hearth toward the tap-hole, and from there runs into the heated pot below. The dross left on the hearth is removed when no more lead melts out from it, and is sent back to the reverberatory furnaces for reduction. The argentiferous lead now in the pot is mixed with about three to four per cent. zinc, and stirred continually with a perforated ladle for about forty minutes, when it is dipped out into iron molds and sent to the separating furnace. Below are given a few examples of what the furnace puts through and brings out, and also the amount of zinc mixed with the argentiferous lead for the extraction of its silver:

ZINC FURNACE.

Date, 1873.	Time.	Bars in.	Weight.	Zinc.	Bars out.	Remarks.
Oct. 25....	10:45 A. M.	22	2215	88	22	Hussey bullion.
" 25....	3:00 P. M.	21	2170	85	22	" "
" 25....	6:00 P. M.	21	1995	80	21	Emma bullion.
" 25....	8:45 P. M.	21	2070	80	21	" "
" 26....	12:00 M.	21	2000	80	21	" "

The above gives the date and time when the charge enters the furnace, number of bars composing the same, weight of bars, amount of zinc in pounds mixed with the argentiferous lead and number of bars after ladling out. I regret that the amount of dross produced from the bullion is not given, as generally no account was kept of it, as should have been.

At the Swansea Works, 60 lb. of zinc are mixed with every ton of argentiferous lead. The above table shows that more than this is generally used at South Lynne.

The bullion at the latter works does not, I believe, generally assay so high in silver as that of the former, but I am inclined to think that the refined lead sent away from the works at South Lynne, generally contains less silver per ton than that from the Swansea, and the probable reason for it is in the larger proportion of zinc used at South Lynne.

SECOND LIQUATION AND SEPARATION.

The second liquation, or so-called separation furnace, is similar to the zinc furnace in its construction, with the exception that the hearth of the separating furnace has not as great an incline from the fire-bridge toward the tap-hole as that of the zinc furnace. On the floor, immediately in front of the charging door, there is an iron plate, upon which the argentiferous zinc dross is stirred about with a shovel after coming out of the furnace, in order to somewhat decrease the size of the larger lumps before entering the zinc distillation retorts. The manipulation of running the argentiferous lead mixed with zinc through this furnace, is about the same as with the zinc furnace, with the exception that it must be done with much more care, and, at the same time, more slowly, if a thorough separation of the silver from the lead is to be obtained. As lead fuses at 334°C., and zinc at 411°C., the utmost care must be given to the fire, so that the temperature in the furnace may be sufficient to melt out the lead only, and to leave the argentiferous zinc dross remaining on the hearth with as little lead as possible. The longer the process lasts, that is, the more time consumed in liquating the lead, the less silver there will be found in the same if, previous to its liquation, it has been properly mixed and thoroughly stirred with a sufficient amount of zinc. When the charge had been properly manipulated it often happened that I was unable to find a trace of silver in the desilverized lead by cupelling ½ of an assay ton or 9.722 grammes. But, on the other hand, when poor zinc scrap had been used, instead of good slab zinc, the desilverized lead would sometimes assay as high as 18 oz. to the ton, even when the zinc had been well mixed with the lead and slowly liquated. This zinc scrap made use of for a short time, was undoubtedly principally composed of iron.

Below is a schedule in which is given the date and time of charge entering the furnace, number of charge, number of bars composing same, number of bars of desilverized lead produced, weight of same, amount of silver per ton contained therein, and also the quantity in pounds of argentiferous zinc dross produced. Charge No. 23 was in the furnace 7 hours and 10 minutes, charge No. 24 8 hours and 34 minutes, charge No. 25, 6 hours and 16 minutes, charge No. 26, 8 hours, and charge No. 27, 9 hours and 30 minutes.

SEPARATING FURNACE.

Date, 1873.	Time.	No. of charge.	Bars in.	Bars out.	Weight.	Assay.	Dross produced.
Oct. 28..	6:30 P. M	23	20	17	1643	trace.	270
" 29..	1:40 A. M.	24	20	16	1594	clear.	200
" 29..	10:14 A. M.	25	20	18	1732	2-5 oz.	239
" 29..	5:30 P. M.	26	20	17	1650	3-5 oz.	220
" 30..	1:30 A. M.	27	20	17	1625	trace.	181
" 30..	10:00 A. M.	28	20	18	1764	clear.	169

LEAD REFINING.

Before following up the argentiferous zinc dross, we will first finish with the desilverized lead and then return to the former subject. After the desilverized lead has been ladled out of the pot belonging to the separating furnace into iron molds, it is sent to the lead refining furnace for further treatment.

The lead refining furnace is an ordinary reverberatory furnace with charging and fire doors on one side and tap-hole on the opposite. A charge consists of about 25 bars, the bars averaging about 100 lb. in weight. The principal impurity to be eliminated from the lead in its present state, is zinc, if the other impurities, such as antimony, arsenic, copper, iron, etc., have already been well removed during the processes of lead softening and liquation, which took place previous to the bullion being mixed with zinc. The charge remains in the furnace between three and four hours, depending, of course, upon the quality of the lead. Formerly the lead produced at the works in South Lynne, had a good reputation as fine soft lead, but of late the process of refining has not been carried so far as formerly, as only lead adequate for pipe purposes was desired. Below is a statement for several days of what the furnace put through with its production in marketable lead, also the date and time of charge entering furnace, number of the charge, number of pigs of refined lead produced and assay in silver per ton of the same. When the charge is finished, the lead is allowed to flow into a cast iron pot, that is provided with a fire-place. Sawdust is strewn over the surface of the lead in the pot to prevent its oxidizing. The lead is then ladled out into iron molds having the impress of the company's name on the bottom. When two or three molds have been filled, the oxyd formed on the surface of the lead is smoothly scraped off, in order to give the pigs a smooth and bright appearance. The metal having become cool it is dumped out of the molds, piled up and is then ready for shipment.

LEAD REFINING FURNACE.

Date, 1873.	Time.	No. of Charge.	Bars in.	Bars out.	Assay.
Oct. 22.....	12:30 P. M.	47	25	33	2 oz. per ton.
" 23.....	9:00 A. M.	48	24	31	trace
" 25.....	8:30 A. M.	49	25	31	clear
" 25.....	1:30 P. M.	50	26	33	clear
" 26.....	8:30 P. M.	51	26	36	2 oz per ton.

The molds into which the refined lead is ladled are smaller than the other molds in use, hence the amount brought out appears to be greater than that put into the furnace.

ZINC DISTILLATION IN RETORTS.

We will now return to the subject of the extraction of the silver from the argentiferous dross. This dross is principally composed of zinc, lead and silver, and sometimes contains a considerable amount of antimony, if the bullion contains a large amount of that metal, which has not been thouroughly eliminated during the process of lead softening and liquation. When the argentiferous zinc dross contains a large percentage of antimony, the process of distillation is much retarded and the retorts become worthless in a much shorter time, than when the dross is free from that metal.

The retorts are made of fire clay and are placed in an inclined position within the tilting retort furnace invented by Mr. FABER DU FAUR. The furnace is held together by means of cast iron buck-staves and wrought iron rods. The general shape of the wind furnace is that of a hollow cube. The bottom is of wrought iron bars, which constitute the fire-grate; the top is arched over, but in the center of the arch there is left a square hole, which serves as the charging hole for fuel. There is also an aperture in the front side, through which the

neck of the retort slightly projects. The space left between the neck of the retort and the sides of this aperture is tightly stuffed with fire clay. On the rear side, almost two thirds of the way up from the bottom, there is a small square hole connecting with a short horizontal flue, that passes into an aperture in the lower part of the chimney. At the works at South Lynne, there are three of these retort wind furnaces situated around the same chimney. They are all invertable by means of a simple piece of mechanism, consisting of the axle of the wind furnace, supported on cast iron feet, and of a small cog-wheel attached to one end of the axle, into which plays a worm, which on being turned by means of a hand-wheel, revolves the furnace on its axle. By this means, the retort and furnace can be turned nearly up-side down, thus emptying the retort of its contents. Coke is the fuel used. When the retort furnace is filled up to the top with burning coke, the retort is completely surrounded on all sides with live coals. The temperature existing within the retort must be very high, as it is that of a white heat. I think it can not be doubted, but what it is sufficiently high to volatilize silver, especially as it would be more disposed to volatilize in conjunction with the distilling zinc. Some silver is also undoubtedly carried off mechanically with the zinc, as it distills over. I regret very much, that I am not able to give any new facts relating to this important and interesting subject, as I had no opportunity of making experiments. The apparatus thus imperfectly described, is patented by Mr. BALBACH of Newark, N. J. and also the zinc and separating furnaces before spoken of.

The argentiferous zinc dross after being mixed with small pieces of charcoal, is put into the retorts with a scoop, as soon as the retort has become sufficiently heated. The retorts are filled full up to the neck and as the distillation progresses, more charcoal is added to the contents of the retort from time to time, as deemed necessary. As soon as the zinc begins to distil over (known by the white fumes of zinc oxide that escape from the mouth of the retort) a hollow conical shaped prolongation of fine clay, called a nose, is placed before the mouth of the retort, in order to condense as much metallic zinc as possible. As fast as zinc condenses in the nose, it is removed with a small iron rod, hooked at one end, by passing it into the orifice of the prolongation by the retort-man. The zinc fumes (zinc oxide) issuing from the end of the nose pass off into the atmosphere through a sheet iron pipe, that passes through the roof of the building into the open air. A very small quantity of the oxide is saved, namely, that which accumulates on the inside of the sheet-iron pipe; this is only a very small proportion of the whole, of course. About 50 per cent of the zinc is regained as metallic zinc, through its condensation in the noses.

The distillation is known to be progressing well, when there can be seen at the end of the nose, a small flame having the characteristic pale-yellowish-green color of zinc, when it burns to oxide, and when accompanied with voluminous white clouds of zinc oxide. The flame is much brighter and larger, when the distillation is taking place in a new retort, than in one which has been used for several times; the disengagement of zinc fumes is also more energetic.

The retort-man must give his almost constant attention to the nose of the retort and see to it, that the passage is kept continually free, for if it should become stopped up with condensed zinc, there would be danger of an explosion. More attention is required to this point during the first part of the distillation, than toward the latter, as it is then, that the distillation is the most energetic. When the zinc flame is no more visible and zinc fumes are evolved in only small quantities, the nose is removed and the retort left to itself until scarcely any more fumes are perceptible issuing from the mouth of the same. When the process is finished, the furnace with its retort is so inclined, as to allow the contents of the retort to flow out into a small iron pot, held and carried by two workmen. The rich argentiferous lead thus obtained, is poured from the pot into iron molds making bars about 1½ feet long, 2 inches thick and about 3 inches wide at the top and which are so light, that they can be placed upon the test of the cupellation furnace, without injuring it. This retort bullion assays anywhere between 2,000 and 3,000 oz. in silver per ton of 2,000 lb. depending, of course, on the richness of the ore worked.

After the retort has been emptied of its contents, and well scraped out, it is turned right side up again, and is ready, if in good condition, for another charge; if not, the grate bars must be taken out, the coke removed, and retort and furnace allowed to cool off, after which the old retort is taken out and a new one set in. After the furnace has become cool, it takes but a short time to remove the old retort and replace it with one that is new. The retorts used at South Lynne were generally unfit for further use after having put through about nine or ten charges, they becoming, after this, so clogged on the interior with zinc oxide, and covered over on the outside with a thick crust of slag, formed from the ash of the coke, that it became difficult to heat them to that degree in which zinc freely volatilizes. It is considered more economical, therefore, to do away with the retorts as soon as they become so worn that the process of distillation would be prolonged by their further use, and it is considered better to economize in time than in retorts.

Below is given the number of the retort, date and time of charge, entering same, number of the charge, number of pounds of dross composing same, number of bars produced, weight of same, and amount of metallic zinc regained by condensation. The amount of oxide saved is not given, it being a very small part of the whole evolved. What little quantity is saved is sold.

RETORT NO. I.

Date, 1873.	Time.	No. of charge.	Pounds of dross.	Bars out.	Weight, lb.	Lb. zinc regained.
Nov. 2....	4:00 A. M.	5	299	36	203	34
" 3....	6:00 P. M	6	319	36	195	58
" 4....	3:00 P. M.	7	320	36	179	59
" 5...	8:00 P. M.	8	245	31	141	38

It will be perceived by the above statement that a charge consists of about 300 lb. dross and remains in the retort—charge No. 5, for about 38 hours, charge No. 6, for 21 hours, and charge No. 7, for 29 hours—and the average time in these three cases would consequently be 29½ hours.

The metal ic zinc saved is used again for the desilverization of the silver-lead.

At the silver smelting and refining works on Forty-second street, belonging to C. P. LUNT, I noticed that they make use of the old retorts in condensing the zinc in the following manner: The retort is cut in half, the lower half being luted on to the retort furnace immediately in front of the mouth of the retort. Through the bottom a small hole is knocked, to allow the escape of the zinc fumes. Whether more zinc is brought to condensation in this manner than by the use of fire clay noses, I am unable to state.

CUPELLATION.

The cupellation furnace at the works at South Lynne is a small one of the English pattern, having one tuyere, supplied with blast by a No. 3 Sturtevant blower. The blower is run by a small steam engine that has a vertical tubular boiler. The furnace and engine are in a separate room, the floor of which, in front of the furnace, is covered with sheet iron, so that all pieces of silver that may happen to fall on the floor can be easily swept up. The English style of cupellation furnace is so generally well known, that a description of the same will not be necessary.

The test is made of a blue limestone brought from Newark, N. J. It is ground and sifted to the proper size and then stamped into the iron test frame. The center of the test is scooped out somewhat in the shape of a horse shoe.

At each cupellation about 6 to 10 silver bricks are produced, weighing on an average about 500 oz. each and averaging 995 thousandths fine, according to tests made at the governmental assay office in New York City.

I give here some assays made by myself, which show the amount of silver contained in the litharge at various stages of the cupellation, which in this case lasted for 18 hours. The samples were carefully taken from the litharge every hour, as it ran off the test. These assays show, that as the cupellation nears its end, the greater is the amount of silver dissolved in the litharge, or in other words, the smaller the proportion of lead to the silver present on the test, the richer the litharge will assay in silver. The assays also show that the amount of silver contained in the litharge, depends upon the skill with which the operation of cupellation is conducted, for if it were otherwise, we should expect that the amount of silver in the litharge would gradually increase from the first assay up to the last, and as will be perceived, this is in a manner so, but the increase is not gradual; for example: the sample taken in the third hour assays higher in silver than of that taken in the fourth hour. There are several other like cases, which will be found on inspection.

ASSAYS OF SAMPLES OF LITHARGE TAKEN EVERY HOUR DURING THE CUPELLATION.

1st	Hour.....	9	oz.=0 03 per cent.	10th	Hour.....	21	oz.
2d	"	18	"	11th	"	45	"
3d	"	9	"	12th	"	19½	"
4th	"	18	"	13th	"	39	"
5th	"	18	"	14th	"	25½	"
6th	"	12	"	15th	"	36	"
7th	"	15	"	16th	"	49½	"
8th	"	15	"	17th	"	88½	"
9th	"	10½	"	18th	"	144	" =0.5 per cent.

I have had the test bottom to assay as high 149 oz. per ton in silver. This, of course, as well as the litharge, go back to the reverberatory furnaces for further treatment.

SILVER REFINING.

The silver bricks from the cupellation furnace are melted over again in graphite crucibles in the wind furnaces of the laboratory, with addition of a little quartz sand and borax, which gives the silver a brighter appearance and also frees it from any litharge that may be with it. It is then poured out into cast iron molds, stamped, and is then ready to be sent to the New York assay office.

The silver in accordance with the Balbach process, must go through seven different processes before it is ready for market, viz:

1st. Smelting and reduction in reverberatory or shaft furnaces; 2d. Softening of the silver-lead; 3d. Liquation and mixing with zinc; 4th. Second liquation in separating furnace; 5th. Distillation of zinc in retorts; 6th. Cupellation of rich argentiferous lead; and 7th. Refining of silver in crucibles.

TRADE REVIEW.

NEW YORK, April 10, 1874.

ANTHRACITE.

There is little change to note in the condition of the anthracite market for the week past. There is undoubtedly an improvement in the trade and a somewhat better tone in the market, though that is still exceedingly dull and very discouraging to the dealers. The reduction of 15 per cent. "on the ten million basis," in the quantity of coal to be sent to competitive points during the present month by the combined companies, will doubtless have to be continued next month, or possibly the reduction will be still greater, for the stocks at all the shipping ports continue to increase.

We hear of several of the Lehigh collieries, in addition to a large number in the Wyoming and Schuylkill regions, that have to shorten their output, or even to stop altogether for want of orders. Some of the large companies speak of doing "a good business, fully up to last year's standard;" but the general feeling is that trade is reviving but very slowly, and that the prospect is that this market will continue dull during the entire half of the year, though, of course, some improvement will take place as the season advances.

PRODUCTION.

The total *production* of anthracite from all the regions for the week ending April 4 was 402,356 tons, as against 386,576 tons in the previous week. The total quantity mined since the 1st of January to the 4th of April was 3,678,981 tons, exclusive of consumption at the collieries.

RECEIPTS AT TIDE WATER.

The amount of coal sent to Port Richmond during the week is reported officially at 47,000 tons, the shipments 38,000 tons and the stock on hand 110,000 tons.

In Bituminous Coal we have to note a somewhat better market, with some large sales during the week at very low prices.

The Eastern and Maine Central Railroads purchased about 47,000 tons of George's Creek at a figure which we understand to be about $4 60 f. o. b. at Baltimore.

A sale of 12,000 or 15,000 tons to the Boston and Lowell Railroad is reported, and some large Eastern iron interests are negotiating for some 50,000 tons.

The Cunard Steamship Company is also reported to have purchased recently a large amount of these Cumberland coals. Prices not made public.

These sales, made mostly by the George's Creek Coal and Iron Company are stated to have been at prices rarely exceeding $4 60 per ton, or about 20 or 25 cents below the regular quotations. Several of the large companies refuse to take contracts at these figures, preferring to leave their coal in the ground. There is no doubt, however, that Cumberland coal is bringing from 10 to 15 cents per ton less this year than last, and even at that rate there is difficulty in making sales.

The extreme dullness of the coal market may be seen in the fact that no better offer than $4 25 per ton could be obtained for the small cargo of provincial coal noted by us as in the market last week; the cargo was consequently ordered to the West Indies.

Some of the dealers in provincial coals expect to be able to deliver here at about $6 per ton this Summer. During the past year, Nova Scotia sold us 264,750 tons of coal, principally for gas making, while this year the sales will probably not reach one-third this amount, while the mines which produced in 1873, 1,051,467 tons, have this year an estimated capacity of 1,250,000 tons. Unless the Upper Provinces take the surplus

there will be a considerable reduction in prices to make a market for it, and should Congress reduce or abolish altogether the duty of 75 cents, gold, now levied on coal coming into the United States, it would put these coals in the New York market at $5 50 per ton, at which price there is no doubt it would take the market from our higher, though superior Cumberland and Kanawha coals.

Work has been commenced on the Cape Breton Railroad branch line, (about 20 miles), to Louisburg. This will open to the coal trade one of the finest harbors on the Atlantic coast, and the nearest port to Europe, being, in fact, only 1950 miles from Galway; and it will also greatly reduce the sea carriage on coal for New York, without increasing its rail carriage. We look upon the opening of this fine port as a matter of great importance to the Provinces. It will become a convenient coaling port for steamers, and doubtless vessels coming over light will take on coal there for delivery at American ports.

The present dull market, and the prospect of low prices throughout the year, should induce our large companies to work up a foreign trade which would take our surplus, and act as a regulator on our home market, preventing the utter prostration which ensues from a stock of a few hundred thousand tons more than the market demands, when we have no other outlet for our coal.

Efforts are being made to develop the coal fields of Alabama, the prospective markets being at the iron works now established in that State and the foreign market, which is estimated at over 2,000,000 tons annually.

Cuba takes about 350,000 tons, St. Thomas 125,000 tons, and other West Indian and South American ports large amounts, and at prices which should pay our coal companies much larger profits than they are now making, or than they will probably obtain for some time to come in the home market.

In January of this year coal was $13 per ton at Havana, $11 55 at Barbados, $15 at Matanzas, $13 at Greytown.

We commend this suggestion to the attention of our large Cumberland companies.

Short Weight in Coal.

It is notorious that not a few of the retail coal dealers in our large cities are in the habit of defrauding their customers by furnishing but 1600 or 1800 lb. instead of 2000 for the ton. We note in the daily papers of the 8th a case of this kind brought up, in which Mr. JOHN W. ATWOOD is accused of furnishing but 1600 lb. to the ton in supplying the poor of the city, under a contract with the Commissioners of Charities and Correction. We do not propose to judge Mr. ATWOOD in this case. We have heard him highly spoken of by those who have had dealings with him; and he claims to be able to disprove the very serious charges brought against him; we trust he may do so, for practices of this kind bring merited disgrace on those implicated, and they are a direct injury to those honest dealers who furnish to their patrons full weight and good quality in competition with short weight and inferior quality, which are very frequently given by a certain class of our retail dealers.

As a general rule, consumers may take it for granted that "cheap coal," by which we mean coal selling below the standard prices of our large dealers, means short weight or poor quality, or both, and it is almost invariably the dearest coal that can be purchased. What makes this class of swindling, if possible, still more despicable, is the fact that it is generally practised on the poorest classes, on those whose scanty earnings scarce suffice for existence.

Since our last report but little has been done in sales of gas coal. Some small additions have been made to the early contracts for Westmoreland and Penn, and the quantity to be delivered here from these mines will exceed somewhat 325,000 tons. The Despard and Marion coal companies, have placed 10,000 tons each in this market at $7.50, and some small orders for Youghiogheny, from the Waverly mines, are being executed at the same price.

The cargo of Glace Bay coal, which we noticed as on the market last week, has been ordered to the West Indies, a satisfactory price not being obtainable here; it is said, no more than $4 25 per ton was offered.

Freight from Port Caledonia to New York, $3.25 per ton.

Freight from Richmond to New York, $2.00 per ton.

Our Philadelphia Correspondent writes:

There is no perceptible change in the condition of the Coal Trade from what it was one week ago. Instructions to ship some of the coal contracted for, come slowly and new orders are scarce. A little more activity is generally expected to take place shortly.

The combined companies may well be proud of the faithful manner in which one of their number, the Reading, carries out the curtailment of production at competitive points, ordered by the Council of Six. If all should go at it with a vengeance, like the Reading, the public would not be long in clamoring for more coal. A curtailment of 15 per cent. on the 2,500,000 tons allotted to the Reading for competitive points, means less than 6 per cent. on a production of over 6,000,000 claimed for the Schuylkill Region, but instead of that, the reduction since the 1st of April has been nearer 50 per cent. than 15 per cent. This is caused by a blockade of loaded cars such as has never been witnessed before in this quarter. It is variously estimated that from 7,000 to 10,000 loaded cars are now standing and the amount is increasing daily. The blockade Spring, when the *former factors of the coal operators* believed have obstructed the Delaware, so that vessels could not come up that river, was child's play compared to the present one. Twelve of the collieries of the Reading Coal and Iron Co. are said to have been stopped, and their largest Red Ash colliery is being filled with water to put out a fire just started, but the relief is not felt by those who continue to work and try to fill the orders they have secured. No one can see what is gained by this manner of managing a concern of such magnitude as the Reading railroad. Straining the coal cars by keeping them for days and weeks full of coal which is paying no tolls, and preventing at the same time coal from being loaded in them which is sold and would pay tolls, appears to outsiders absurd, and an injustice to the citizens not in the ring. What is called the "pool" is supposed to be in some kind of trouble, the nature of which is not known yet and its existence was not even suposed until one of the organs of the combination made mention of it this week.

Freights continue depressed. Rates to Boston are quoted at $2.25, but concessions are made particularly for large vessels. Portland and Bath rates are as low as $2.25; Providence $1.90 to $1.95; Washington, $1.05; Richmond, $1.25; Norfolk, 90 cents.

The local trade is somewhat active.

One more of the large coal wharves at Boston, below bridges, is to become a storing place for the Reading Coal and Iron Company.

We have to report a recent contract for 30,000 tons of Red Bank Orrel with the Grand Trunk Railroad, at about $6, gold, per ton of 2000 lb., delivered at Toronto. This is the first purchase of coal by the Grand Trunk Railroad from Pennsylvania, their former supplies having been obtained from Ohio.

THE BRITISH COAL TRADE.

LONDON, March 21, 1874.

The coal trade is in a very unsettled and depressed condition, and, although trouble is anticipated from strikes, yet there has been a general decline and weakness in the market, and the tendency is still downward. In some cases strikes have already commenced; in others, they are threatened, and everywhere there appears to be a spirit of discontent. Arbitration between the masters and workmen has, so far, not proved so successful as could be desired. In some cases, the arbitrators are unable to agree, and in cases, where a decision is made contrary to the views of the miners, they refuse to abide by it. It is now generally felt, that the prices of coal must go still lower, before there will be a liberal demand, or any marked activity will be observed. The masters will be unable to reduce the prices of coals unless they can re-adjust the prices of labor, as some are already working at a loss, thereby making it an imperative necessity that a reduction of wages must take place. The miners in all the districts are willing to submit to some reduction, but object to the large reduction proposed by the masters. Although the prices of coals have fallen about 35 per cent. without a reduction in the price of labor, yet the miners object to a reduction of 20 per cent. from their wages, although, on the other hand, when the prices of coal were advancing, the masters claim the men received a corresponding increase.

The following are some of the leading quotations at Cleveland; households, 158.@178.; manufacturing, 118.@128.; coke, 238.@268.; at Darlington, at the pit, unscreened, 108.@118. 6d.; gas-coal, 148. 6d.@168. 6d.; best households, 168.@178.; at Wigan, at the pit, best households, 188.; furnace coal, 128.@138.; burgy, 98. 6d.@118.; slack, 88. 6d.@108.; at London, 198.@218. 9d.

Wales.—In steam coal there is a fairly active demand, and prices are rather firm. This quality of coal does not appear to share the usual unsettled state of things observable in the other qualities. In households the demand is quite light and the proprietors are lowering their quotations. At most of the collieries, notices of reductions of wages have been given. The masters propose a reduction of 6d. per ton for cutting and a corresponding reduction on other labor. The men will likely oppose this, but it is the only course open to the masters if they are to keep business going at all. Best double screened steam is quoted at 198.@208. per ton.

Scotland.—In a great many cases the notices of a reduction in wages expired at the close of last week, and in accordance with the advice of Mr. Alexander Macdonald, M. P., the men generally agreed only to work at those collieries where there had been but 1s. per day reduction. The miners, although having received very good wages during the last year, are generally unable to remain idle for any great length of time without assistance. They proposed to double-shift the collieries where there has been but 1s. per day reduction, and take out a certain number of the collieries at a time, while the workmen at the others remained at their employment at the masters' terms, and contributed to those on strike. This was learned by the employers, who frustrated them by resolving upon a general lockout. The masters are in strong unison, and determined in the action they have taken, and it is thought, will soon drive the miners to an acceptance of their terms. The prices are firmer this week, with a slightly improved demand, but this is conditioned on the prolongation of the strike. The shipments last week were 29,716 tons, against 45,079 tons as compared with the corresponding week last year.

Ireland.—The downward tendency of the prices of coal in England and Scotland is not affecting the high figures in Ireland. The demand has been fully up to the supply, and cargoes have been sold as landed in many places, so that no effort has been made to lower the prices. At Belfast, from 50 to 100 vessels arrive weekly, thus importing to the north of Ireland alone from 10,000 to 20,000 tons of coal per week.

COAL PRODUCTION.

Anthracite.

Mined for the week ending April 4, 1874.

	WEEK. tons.	YEAR.* tons.
Wyoming Region.		
Delaware and Hudson Canal Co	56,158	552,031
Delaware, Lackawanna and Western RR.	52,202	559,806
Pennsylvania Coal Co	24,488	265,890
Lehigh Valley R.R.	18 886	237,161
Pennsylvania and New York Railroad	1,974	12,126
Central Railroad of New Jersey	27,420	251,963
Lehigh Region		
Lehigh Valley Railroad	56,981	669,159
Central Railroad of New Jersey	29,267	158,786
†Danville, Hazleton, and W. B. R.R	....	2,640
Schuylkill Region.		
Philadelphia and Reading Railroad	121,769	843,759
Shamokin and Lykens Valley	12,878	119,817
Sullivan Region.		
Sullivan and Erie Railroad	331	5,843
Total	402.356	3,678,981

* Year beginning January 1st.
† From the Penn. R.R. Co.'s report, March 28.

Bituminous.

Mined for the Week Ending April 4.

	Week. Tons.	Year Tons.
Cumberland and Pennsylvania R.R	33,117	293,529
Cumberland Branch R.R.	3,662	30,735
Barclay R.R.	3,003	41,054
Huntingdon & Broad Top R.R.	5,715	99,977
†Snow Shoe	....	15,466
†Tyrone and Clearfield	....	137,164
†Allegheny Region, Penn. R. R.	...	54,044
†West Penn. R.R.	....	50,850
†Southwest Penn. R.R.	....	774
†Gas Coal, Penn. R.R	....	154,514
†Pittsburgh coal, Penn. R.R.	....	79,323
Coke.		
†Tyrone and Clearfield	....	112
†Allegheny Region, Penn. R.R.	....	35
†West Penn. R.R.	....	12,012
†Southwest Penn. R.R	....	84,890
†Gas Coal, Penn R.R.	....	9,088
†Pittsburgh Coal. Penn. R.R.	....	26,306

†From Penn. R.R. Co's. report for week ending March 21st.

MARKET PRICES OF COAL.

Import Duty on Coal.

Anthracite free. Bituminous, per ton of 28 bushels, 80 lb. to the bushel. 75c., gold.

All slack, or culm, such as will pass through a half-inch screen, per ton of 28 bushels, 80 lb. per bushel, 40c., gold

Not otherwise provided for, per ton, 40c., gold.

ANTHRACITE.

WHOLESALE PRICES FOR APRIL. F. O. B. AT SHIPPING PORTS.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals.						
‡Scranton at E'port & Hoboken	4 60	4 70	4 80	4 95	5 40	4 40
*Lackawanna	4 60	4 70	4 80	4 95	5 40	4 40
§Pittston at Newburgh	4 30	4 30	4 40	4 50	5 00	4 15
Wilkesbarre at Port Johnston	4 60	4 70	4 80	4 95	5 40	4 40
Newport and Plymouth	....	....	4 80	4 95	5 60	4 40
Susquehanna Coal Co. at Amboy	4 75	4 85	4 90	5 05	5 50	4 50
Red Ash, Harvey coal	....	....	4 90	5 05	5 60	4 50
Lehigh Coals.						
Old Company at Port Johnston	5 55	....	5 50	5 50	5 40	4 40
Old Company's Room Run	5 05	....	5 05	5 05	5 65	4 70
Sugar Loaf at Port Johnston	5 55	....	5 50	5 50	5 50	4 55
Hazleton at Elizabethport	5 40	....	5 35	5 35	5 50	4 55
Honey Brook at Elizabethport	5 40	....	5 35	5 35	5 50	4 55
Spring Mt. C. Co. at Hoboken	5 40	5 40	5 35	5 35	5 65	4 70
Beaver Meadow at South Amboy	5 55	....	5 50	5 50	5 50	4 55
McNeal at Port Johnston	5 40	5 40	5 35	5 35	4 90	3 55
Schuylkill Coals at Port Richmond.						
Schuylkill White Ash	4 10	4 20	4 30	4 45	4 90	3 80
Schuylkill Red Ash	....	....	4 45	4 60	4 90	4 05
Shamokin W. and R. Ash	....	....	4 55	4 90	4 90	3 80
N. Franklin	...	....	4 90	4 90	5 05	4 05
Lorberry	....	....	5 05	5 05	5 80	4 55
Lykens Valley	....	....	....	5 80	5 60	4 50

* f. o. b. in New York Harbor.

§These are net prices for delivery, during April, of coal previously contracted for, and are not rates at which the company would now make contracts.

‡ These prices are for registered contracts. Buyers not having contracts will be charged 15 cents per ton more than above prices.

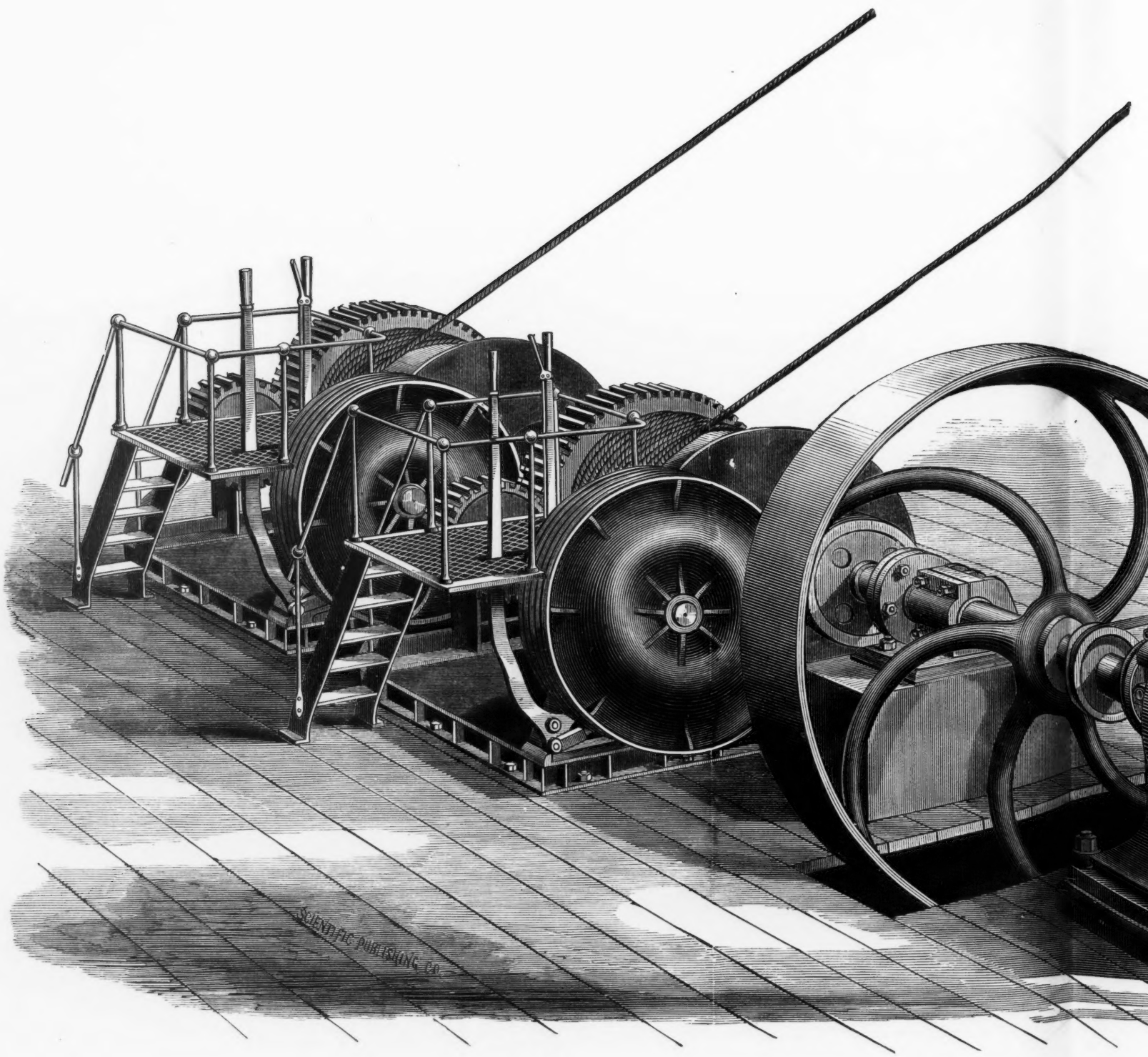
Scranton sale, March 25th, averages: Steamer, $4 50; grate, $4 59½; egg, $4 82½; stove, $5 25; chestnut, $4 24.

Line Prices for April, 1874.

WHOLESALE.

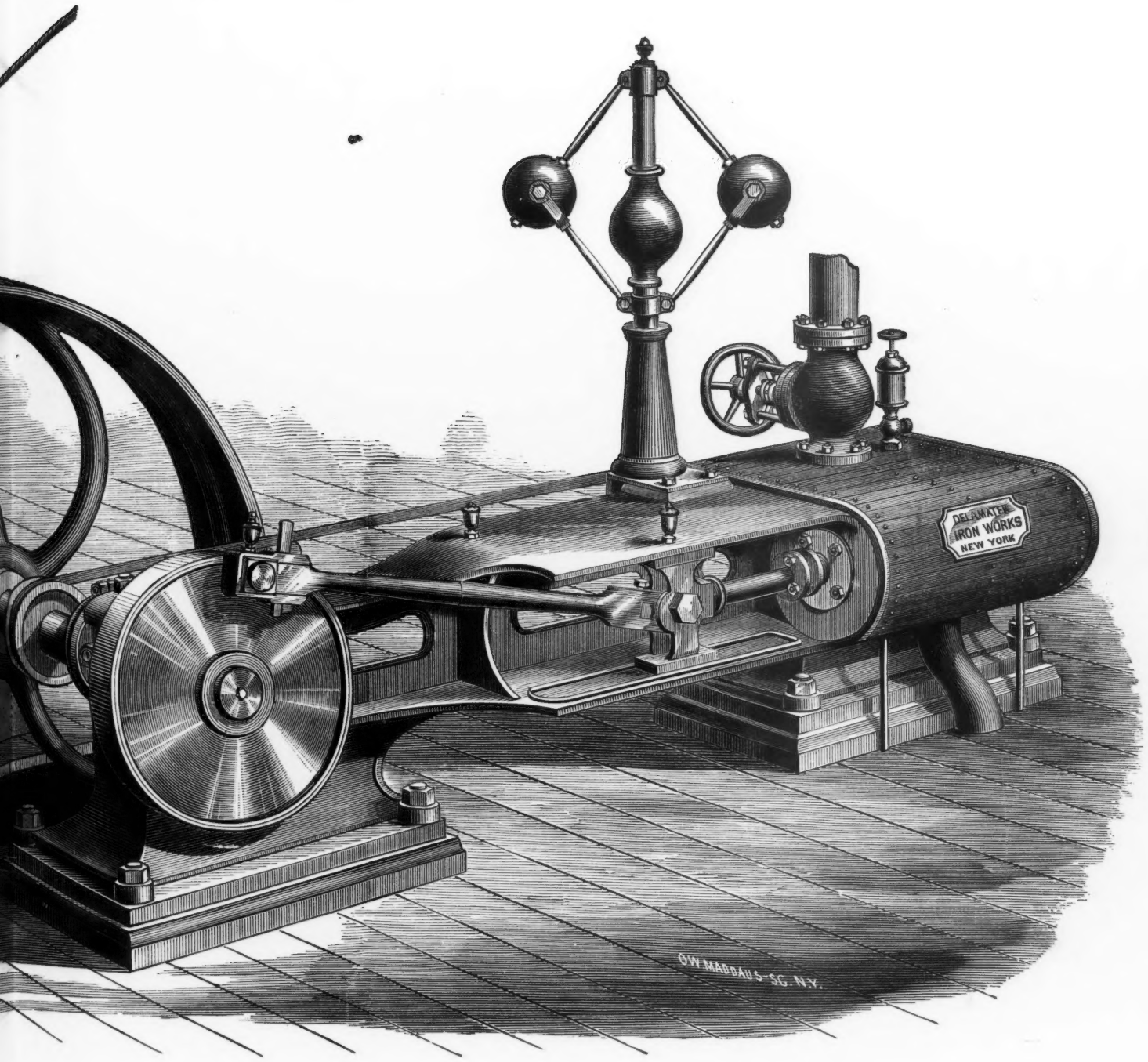
AT	Lump and Broken	Egg.	Stove.	Chestnut.	Pea.
Carbondale	2 25	2 25	2 50	2 00	1 25
Fair Haven	6 00	6 25	6 50	6 25	....
Ithica, New York	4 90	4 90	5 40	5 15	....
Mauch Chunk, Lehigh coal	3 35	3 35	3 60	3 10	....
" Newport coal	2 25	2 25	3 50	3 00	....
" Wilkes-Barre coal	3 50	3 50	3 70	3 20	....
Pittston Junct	2 45	2 45	2 70	2 45	....
Port Carbon	2 75	2 90	3 00	2 25	1 25
Port Clinton	2 91	3 09	3 19	2 44	1 44
Schuylkill Haven	2 83	2 98	3 08	2 33	1 33
Scranton	2 25	2 25	2 50	....	1 25
Wilkes-Barre	2 25	2 25	2 50	2 00	1 25
Waverly	4 75	5 00	5 25	5 00	....

Furnace Lump $3 25, without any commission.



THE REYNOLDS HOISTI

MANUFACTURED BY THE DELAMATER IRON WORKS, FOOT OF



HOISTING ENGINE.

FOOT OF WEST THIRTEENTH STREET, NEW YORK.

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Egg
Stove

Coal Freights from the Anthracite Mines to the Principal Markets.

Schuylkill Coals, per ton of 2240 lb.	From Pine Grove.	From Tamaqua.	From Port Carbon.	From Mount Carbon.	From Schuylkill Haven.	From Port Clinton.
To *Belmont & W. Manayunk, via P. & R. R. R.	$2 12	$2 07	$2 00	$1 99	$1 92	$ —
* Port Richmond, "for shipment." " "	2 12	2 07	2 00	1 99	1 92	—
* Philadelphia and "retail yards," " "	2 22	2 17	2 10	2 09	2 02	—
† Philadelphia, including the charge for the use of cars, barges, and for toll, via Schuylkill Canal	—	—	—	—	1 75	1 64
* Swede Furnace, " " "	1 88	1 83	1 76	1 75	1 68	—
* Aramingo, " " "	1 62	1 57	1 50	1 49	1 42	—
* Port Clinton, " " "	91	86	79	78	71	—
* Allentown, via East Pennsylvania Branch	1 57	1 52	1 45	1 44	1 37	—
* Col'bia, Lanc'r, & points on Lan. Brch., via R. & C. R. R.	1 77	1 72	1 65	1 64	1 57	—
* Heidelberg, via Lebanon Valley Branch	1 54	1 49	1 42	1 41	1 34	—
* Robesonia, via L. and T. Branch	1 35	1 49	1 42	1 41	1 34	—
* Lebanon " "	96	1 55	1 48	1 47	1 40	—
* Harrisburg and Paxton, via L. and T. Branch	1 38	1 72	1 65	1 64	1 57	—
* Dauphin, via Schuylkill and Susquehanna Branch	70	—	1 40	1 39	1 32	—
* Harrisburg, " "	85	—	1 50	1 49	1 42	—
* Jonestown, via Lebanon and Tremont Branch	90		1 80	1 79	1 72	—
* Lebanon, " " "	96		2 01	2 00	1 93	—
† Reading, including charges for the use of cars, barges, and for toll, via Schuylkill Canal	—	—	—	—	95	84
† Bridsburg, add $10 per boat, via Schuylkill Canal	—	—	—	—	65	60
† Trenton, N. J., " "	—	—	—	—	1 00	95
† New York. " "	—	—	—	—	1 62	1 57
† Wilmington, Del., " "	—	—	—	—	85	80
† Bridgeton, N. J., " "	—	—	—	—	1 60	1 55

* These tolls do not include wharfage or shipping expenses at tide ports.

† Ten per cent. is deducted from these rates for lump, steamboat and broken coal.

Lehigh and Wyoming Coals. per ton of 2240 lb.	From Penn Haven.	From Mauch Chunk.	From Hazleton.‡‡	From Upper Lehigh.	From Ashley and Sugar Notch.	Lackawanna Junction.
To ‡ Newark, N. J. via Central Railroad of N. J.	2 45	2 31	2 86	—	—	—
‡ Mauch Chunk, Pa. " " "	14	—	56	59	89	—
‡ Phillipsburg, N. J.	93	79	1 34	2 34	2 64	—
‡ Elizabethport, Port Johnston, Hoboken and South Amboy, N. J., shipping and wharfage 35c. additional	2 09	1 95	2 49	3 34	3 64	—
High Bridge, N. J.	2 40	2 20	2 82	2 79	3 09	—
Somerville and Raritan, N. J.	2 80	2 60	3 22	3 19	3 49	—
Elizabeth, Cranford, Westfield and Elizabethport, for cosumption	2 95	2 75	3 37	3 34	3 64	—
¶ Jersey City, N. J., and New York, via Morris Canal	2 85	2 35	3 17	3 24	3 54	—
Andover, via Del., Lack., and Western R. R.	3 30	—	3 72	4 29	—	—
Port Oram, Dover and Boonton	2 75	2 55	3 17	4 74	—	—
§ Trenton, Somerset Junction & Greensburg, via P. R. R., Belvidere division	2 65	1 97	3 07	3 64	—	—
Trenton, for shipment, including shipping and wharfage	2 13	1 99				
Owego, N. Y.	3 06	2 92	—	—	—	2 18
Groton	4 10	3 96	—	—	—	3 22
Auburn	3 34	3 20	—	—	—	2 46
Waverly	2 98	2 84	—	—	—	2 10
Athens	2 94	2 80	—	—	—	2 06

‡‡ Rates on line coal from Hazleton are 9c. per ton above these figures.

‡ The cost of unloading is to be added to these rates. No charge less than 40c. per ton will be made for any distance. Tolls from Mauch Chunk to Phillipsburg for way points will be $1 15 per ton.

§ Twenty cents per ton less when five cars at a time to one party. Provided that where the reduction makes the rate $1 a ton, or less, the rate will be $1.

¶ 20 cents per ton additional for transferring coal from boat to boat, and 30 cents per ton for reshipment of same from wharves.

New York Wholesale Prices.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
Wyoming Coals						
Scranton	5 10	5 20	5 30	5 45	5 90	4 90
Lackawanna, Delivered on wharf.	5 10	5 20	5 30	5 45	5 90	4 90
Pittston	4 95	5 00	5 10	5 20	5 70	4 85
Wilkesbarre	5 05	5 15	5 25	5 40	5 85	4 85
Newport & Plymouth	. ..	..	5 25	5 40	6 05	4 85
Susquehanna Coal Co.	5 25	5 35	5 40	5 55	6 00	5 00
Lehigh Coals.						
Old Company	6 00	....	5 95	5 95	6 10	5 15
Old Co.'s Room Run.	5 50	....	5 50	5 50	5 85	4 85
Sugar Loaf	6 00	....	5 95	5 95	6 10	5 15
Hazleton	5 85	....	5 80	5 80	5 95	5 00
Honey Brook	5 85	....	5 80	5 80	5 95	5 00
Spr'g Mount. Coal Co.	5 85	5 85	5 80	5 80	5 95	5 00
Beaver Meadow	6 05	....	6 00	6 00	6 15	5 20
McNeal	5 85	5 85	5 80	5 80	5 95	5 00
Schuylk'l Coals. Alongside.						
Schuylkill W. A.	4 95	5 05	5 15	5 30	5 75	4 40
Schuylkill Red Ash.	...	....	5 45	5 60	5 90	4 80
Shamokin W. & R. Ash	....	....	5 55	5 90	5 90	5 05
North Franklin	....	....	5 90	5 90	5 90	4 80
Lorberry	....	....	6 05	6 05	6 05	5 05
Lykens Valley	....	....	....	6 75	6 75	5 50

BITUMINOUS.

WHOLESALE PRICES. F. O. B.

Per ton of 2240 lb.

Broad Top	$6 75	Block House	6 75
Derby	6 75	Ohio Caking	10 00
Kittaning	6 75	Ohio Cannel	12 50
George's Creek, Cumberland	6 75@7 25	Lyonsdale Coal	12 50
West Virginia Gas	7 40@7 50	James River Bit	6 50
Peytona Cannel	13 50	" Carb	9 00
Penn. Gas	7 50@7 65	*Cannelton Cannel	12 50
Westmoreland Gas	7 50@7 65	Liverpool Gas Cannel	12 50
Sterling Cannel	14 00	" House "	18 00
" " del'v'd.	16 00	Newcastle Gas	8 50@9 00
Caledonia	6 60	Red Bank Cannel	9 00
		†Cannelton Splint	9 00

Freight from Richmond, Va., to New York, $2 00.
* $11 f.o.b. at Richmond.
† $7 " " "

RETAIL PRICES.

PER TON OF 2000 LB.

Liverpool House Orrel, delivered	$20 00@$22 00
Liverpool House, Cannel, delivered	20 00@ 25 00
American and Block, delivered	16 00@ —
Straitsville Cannel	16 00@ —

	Grate and Egg.	Stove.	Chestnut.
Pittston Coal, in yard	$5 60	$5 80	$5 00
Delaware & Hudson, delivered	6 60	6 85	6 10
Scranton, delivered	6 75	7 00	6 25
Wilkesbarre, in yard	6 00	6 25	5 50
Lehi and Locust Mountain, del'd	7 00	7 50	6 50

Georgetown, D. C., and Alexandria, Va.

George's Creek and Cumberland f.o.b. $4 45@$4 60, wholesale.

Buffalo, N. Y.

Youghiogheny Gas Coal	$6 00	Connellsville coke	8 00
Catlish Lump	4 75	Beaver Gas Coal	6 50
" Nut	3 50	Red Bank Cannel	5 50
" Nut and Slack	3 00	" Orrel	5 00
" Slack	2 85		

Anthracite, per 2000lb. in cars; retail prices, delivered $1 50 per ton additional.

Lump	$6 50	Stove	6 50
Grate	6 00	Chestnut	6 25
Egg	6 25		

Baltimore, Md.

Reported by E. Stabler, Jr., coal merchant.

WHOLESALE PRICES.

	afloat.	at depot.
Wilkes Barre, "Lee," or "Diamond"		
Lump, steamboat or broken	$5 05	$5 60
Egg	5 35	5 75
Stove	5 45	5 75
Pittston and Plymouth.		
Lump, steamboat, and broken		5 35
Egg and stove		5 50
"Boston" (free burning,) all sizes	5 35	5 50
Shamokin, red or white ash, all sizes	5 35@5 60	5 50@5 75
Lykens Valley, red ash, all sizes	5 55	5 80

From wharf or yard, wholesale, 50@75c. additional.
By retail, all kinds and sizes, per ton of 2240 lb. $7@7 50.

BITUMINOUS.

George's Creek and Cumberland f. o. b. at Locust Point for cargoes	4 60@4 85
West Va. Gas Coal f. o. b. at Locust Point	6 50@....
Kanawha Cannel, coarse	13 00@....
Tyrone	7 25@....
Ritchie Mineral of West Virginia	19 00@....

Boston, Mass.

April 8, 1874.

There has been no change as yet in retail prices, but with a reduction in freights, a decline is anticipated. Most of the cargoes arriving are on contracts, and our quotations are nominal. The receipts of domestic coal at this port for the week ending April 3 were 7,841 tons, and for the year 84,635 tons. There was no foreign coal received during the week, but for the year the receipts are 1,160 tons. We quote:

English Cannel	$24 00@25 00	Pictou	8 25
do do from ship	22 00	Sydney	9 00
Scotch Cannel	15 00@18 00	Acadia	6 75@ 7 25
American Cannel	14 00@15 00	Cumberland	7 40@ 7 75
Lingan	7 50	Anthracite, retail	8 50@ 9 00
Caledonia	7 75	" by cargo	6 75@ 7 50

Chicago, Ill.

April 6, 1874.

REPORTED BY RENO & LITTLE, COAL MERCHANTS.

No change in prices of coal; demand light. We quote:

Lehigh Lump	$11 00	Midway (West Va.)	8 00@ 8 50
Lehigh prepared	10 50@11 00	Cannel	9 00@10 00
Lackawanna, Wilkes-Barre and Pittston	10 00	Blossburg	9 00
		Indiana Block	6 50
BITUMINOUS.		Hocking "Brooks"	8 00
Briar Hill and Erie	8 00@ 8 50	Wilmington and Illinois	5 00
Walnut Hill (W.V.)	8 00@ 8 50		

Cincinnati, O.

April 6, 1874.

Dealers report a steady consumptive trade, and prices unchanged. We quote:

	Bush.	Tons.
Youghiogheny, afloat	9 c.	$2 52
Ohio River	8 c.	2 24
Pittsburgh	11 c.	3 08
Anthracite	—	11 00

The following are retail prices delivered:

Ohio River	12 c.	3 36
Kanawha	13 c.	3 64
Kanawha Cannel	24 c.	6 72
Pittsburgh	12 c.	3 36
Youghiogheny	14 c.	3 92

Cleveland, O.

Youghiogheny, f. o. b., per ton	$4 75	Hocking Valley	3 75
Briar Hill	4 00	Morris	3 60
Massilion	3 75	Cleveland Lump	3 00
Massilion nut	3 50	Silver Creek	4 60
Chippewa	3 75	Anthracite, prepared	10 00
		Anthracite, lump	11 00

Denver, Col.

RETAIL PRICES.

Canon	$6 50	Boulder Valley	$4 75
Marshall	5 50	Eulner	5 50
Murphy	5 50	Black Diamond	5 50
Baker	5 00		

Detroit, Mich.

April 6, 1874.

A good seasonable inquiry prevails for supplies at the following quotations:

Lehigh Lump, per ton	$11 00	Brookfield	8 75
Lehigh nut	10 00	Chippewa	8 00
Scranton, various sizes	9 50	Massilon	8 00
Blossburg	9 50	Straitsville	5 50
Willow Bank	8 00	Nut	4 75
Briar Hill	8 50		

Indianapolis, Ind.

Per 2000 lb. WHOLESALE.		Per 2000 lb. WHOLESALE.	
Brazil Block	$4 25	Steam Nut	2 60
Highland	3 70	Hocking Valley	4 40
" steam	3 40	Gas Coke per bush	12 c.
Brazil nut	3 00	Pittsburgh	6 25
Slack	2 50	Sand Creek	5 00
Virginia Cannel	9 00	Anthracite	12 00
Indiana Cannel	7 20		

Louisville, Ky.

	Bush.	Tons.
Pittsburgh, afloat	10 c.	$2 80
" retail	14 c.	3 92
Kentucky	11@13 c.	3 08@3 64
Indiana and Peacock Pomroy	13 c.	3 64@....
Anthracite, per ton, from yard		10 00@10 50
" afloat		9 00@....

New Orleans, La.

April 4, 1874.

There is a large supply with liberal demand. The coal on hand at Willow Grove coal landing, on April 1st, was 176 boats, 7 barges and 1 hull; consumption during March, 23 boats and 13 barges; arrivals, 75 boats, 11 barges, and 1 hull We quote:

Pittsburgh, wholesale, per bbl	40c.
" at retail	75c.
" per hhd	$7 00
" per box to steamboats	50c.
" " to manufacturers	60c.
Virginia cannel, per bbl	$1 25
Anthracite, per ton	$13 00

Omaha, Neb.

Blossburg(blacksmith)	$18 00	Wyoming	14 00
Anthracite	20 00	Missouri	8 00
Iowa	9 00		

Philadelphia, Pa.

ANTHRACITE.

Broken, in the yard	$5 50
Egg and Stove	5 75
Chestnut	4 75

BITUMINOUS.

Pennsylvania and Westmoreland Gas	6 25
Broad Top	5 25
Powelton Sterling	5 25
Derby	5 50

75 cents per ton additional for delivery.

Pittsburgh, Pa.

April 7, 1874.

There has been but little improvement in trade since our last and prices remain unchanged. The river is low again, but lower markets are well supplied. The coke men say there is no margin in coke at present prices, and they expect no improvement in their business until there is a better demand for iron. The following are the prices on cars here:

Youghiogheny coal per ton		2 25
" coke "		2 75
Connellsville coal "		2 25
" coke "		3 25
Anthracite all sizes "		7 00
C stle Shannon coal on platform per bushel		7½c.

San Francisco, Cal.

From the *Commercial Herald*, March 26.

The market is very liberally supplied with Cumberland and other bituminous coals, while anthracite is scarce and high. We announce the arrival of the St. Lucie, 151 days from Baltimore, with 1650 tons Cumberland. We quote:

Wholesale, ex ship, in gold, per ton.

West Hartley	$13 00	Bellingham Bay	8 50
Wallsend	12 00	Mt. Diablo, coarse	8 50
Australian	11 00	" fine	6 25
Coos Bay	10 00	Anthracite	16 00@17 50
Nanaimo	11 50		

St. Louis, Mo.

April 4, 1874.

Delivered in St. Louis 4 cents per bushel extra.
Delivered to railroads and mills by car ferry 2c. per bushel extra.

	Per bushel.	Per ton.
Illinois coal, retail at East St. Louis	9½ c.	$2 66
" " manufacturers	8½ c.	2 38
" " delivered	12@12½ c.	3 40
Big Muddy	14 c.	3 92
Trenton	12 c.	3 36
O'Fallon	9½ c.	2 52
Anthracite, delivered in St. Louis		$13 50
Missouri cannel, " "		6 50
Indiana cannel		7 00

Toledo, Ohio.

Scranton, all sizes	$9 00	Briar Hill	6 00
Lehigh Lump	11 00	Bituminous	4 50@6 50
Blossburg	8 50@ 9 00		

Halifax, N. S.

Prices in gold, per chaldron of — lbs.

Sydney Coal	$8 00	Little Glace Bay	7 75
Victoria		Albion (at Cunard wharf)	7 50
Gowrie	7 75		

Toronto, Ont.

Prices in gold, per ton of 2000 lbs.

Scranton, all sizes	$7 50	Bituminous	7 50
Lehigh prepared	8 50	Blossburg	7 00
" Lump	9 00		

Montreal, Quebec.

Prices in gold, per ton of 2000 lb., ex yard.

Scotch Steam	$8 00@ 8 50	Lump Lehigh	9 00@— —
Lower Port	7 50@ 8 00	Grate	10 00@— —
Newcastle Grate	11 00@12 00	Egg, Amer. Ant	9 50@10 00
Welsh Anthracite	9 00@10 00	Stove, "	10 00@10 50
English Coke	— —@— —	Chestnut "	10 00@10 50

Provincial Coals.

PRICES IN GOLD F.O.B. AT THE SHIPPING PORTS OF THE MINES.

	Coarse.	Slack.		Coarse.	Slack.
Block House	$2 25	$1 25	Sydney (old)	3 25	....
Gowrie	2 00	1 50	Lingan	2 30	....
Pictou	3 25	....	Caledonia	2 25	....
			Glace Bay	2 25	....

Freights from Cape Breton to New York are $3 25.

Freights.

PORTS.	From Georgetown.	From Baltimore.	From Port Richmond, Philadelphia.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
Albany	....	2 35	....	....
Amesbury, Mass	....	....	....	....
Bangor, Me	....	....	2 50	....
Bath, Me	....	2 75	....	....
Baltimore	....	1 00	....	....
Boston, Mass	2 60	2 75	2 25	1 85
Bridgeport, Ct	2 10	2 00	1 50	85
Bristol, Ct	....	....	1 90	1 20
Derby	....	....	1 50	1 15
Dighton	2 50	....	....	....
East Cambridge	....	....	....	††1 85
Fall River	2 15	2 15	1 90	1 20
Hackensack	....	....	....	....
Hartford	....	2 75	....	1 40
Hoboken	1 90	....	95	40
Hudson	2 50	2 30	....	....
Jersey City	1 90	....	95	40
Middletown	....	....	....	1 25
Mystic	....	....	....	1 15
Newark	2 25	2 00	....	....
New Bedford	....	2 15	1 75	1 25
Newburyport	....	2 70	2 50	2 10
New Haven	2 25	2 00	1 50	85
New London	....	2 00	1 65	1 10
Newport	....	....	1 75	1 20
New York	2 00	1 75	¶ 95	§ 40
Norfolk	90	....	....	....
Norwalk	....	2 20	1 50	85
Norwich	....	2 20	1 50	1 15
Pawtucket	....	....	1 90	‡‡1 30
Philadelphia	1 25	1 15	....	....
Portland	2 75	2 60	3 00	1 75
Portsmouth, N. H.	2 85	2 70	2 60	....
Providence	2 25	2 10	1 75	1 20
Richmond, Va	1 20	....	....	....
Rockport	....	....	2 70	....
Saco	....	....	3 00	....
Sag Harbor	....	1 25	....	1 10
Salem	2 75	2 70	2 50	1 85
Stamford	....	....	1 50	85
Stonington	....	....	1 75	....
Taunton	....	....	....	....
Troy	....	2 40	....	....
Warren	....	....	....	1 20
Washington	....	....	....	....
Wareham	2 75	2 60	....	....

Rates from Rondout to New York 15c. above Weehawken. They are 5c. less from Newburgh going south, and 5c. above Newburgh rates going north.
§ Under 150 tons, 50c. per ton.
¶ This is the rate alongside. Delivery on wharf costs from 16c. to 18c. additional.
†† Towing extra.
‡‡ 3c. per ton per bridge extra.

Freight on Pittston Coal—From Newburgh.

By boats of the Pennsylvania Coal Co., per ton of 2240 lbs.

To Troy Albany and Stuyvesant	60 c.
" Nyack and Hudson and Boston R.R. dock, Hudson, discharges to cars	50 c.
" Hudson, except as above, Rondout and Poughkeepsie	35 c.
" Catskill, at mouth of creek, Sing Sing, Tarrytown, Piermont, and Yonkers	55 c.
" Fishkill Landing and West Point	25 c.
" Peekskill, Haverstraw, Saugerties, and Barrytown	45 c.
" New York	65 c.

Miscellaneous Freights.

Gas Coals.

From Fairmont and Clarksburg, via B. and O. R. R., to Baltimore, including loading	$5 20
From Coalburg and Paint Creek to Richmond, via C. and O. R. R., per ton, including loading	3 75
From Richmond to New York	2 25

TOWING

FROM NEW YORK TO POINTS ON THE HUDSON RIVER.

	per ton.		per ton.
Manhattanville	8 c.	Haverstraw	17 c.
Spuyten Duyvel	9 "	Verplanck's Point	17 "
Yonkers	10 "	Peekskill & Newburg	18 "
Hastings	11 "	West Point & Cold Sp'g	20 "
Piermont & Dobbs Ferry	13 "	Poughkeepsie	22 "
Nyack & Tarrytown	15 "	Rondout	23 "
Sing Sing	16 "	Hudson	25 "
Croton Landing	17 "		

Boats of 100 tons and under—per boat.

Manhattanville	$11 00	Spuyten Duyvel	$13 00
Yonkers	15 00	Tarrytown	18 00
Sing Sing	20 00	Peekskill	20 00
Newburgh	25 00	Poughkeepsie	30 00

ON LONG ISLAND SOUND.

	per ton.		per boat.
Norwalk & Bridgeport	33⅓ c.	Port Morris	$20 00
New Haven	33⅓ "	West Farms, mouth of Creek	25 00
Derby ($50 per b't extra)	33⅓ "	West Farms	35 00
Southport & Westport	40 "	West Chester	30 00
Milford	40 "	College Point	25 00
Branford	45 "	Flushing & White Stone	30 00
New London	60 "	East Chester Town Dock	60 00
Middletown	65 "	New Rochelle & Glen Cove	50 00
Norwich	68 "	Mamaroneck & Port Chester	70 00
Hartford & Stonington	75 "	Greenwich, Stamford & Darien	75 00
Mystic	75 "		
	per boat		
Harlem	$18 00		
Mott Haven	18 00		

Harbor Towing.

From Hoboken to

	Loaded.	Light.
53d st., towing limits	$6 00	$5 00—$11 00
Gowanus	8 00	6 00— 14 00
Newtown Creek	10 00	9 00— 19 00
Port Johnston	9 00	9 00— 16 00
130th street, North River	....	....— 18 00
From East River to Weehawken and return to East River	9 00	7 00— 16 00

To 61st st., $12 extra; to 79th st., $14 extra; to 93th st., $16 extra.

Lehigh and Delaware Division Canals.

Mauch Chunk, Pa., March 25, 1874.

Until further notice the following rates of toll, via the above canals will be adopted.

From Mauch Chunk to Easton per ton of 2240 lb	46c.
" " " " Bristol or New Hope	70c.
Towing from Bristol to Philadelphia	7c.

On local shipments the toll sheets of 1873 will remain in force.

Erie and Champlain Canals.

The following rates represent the figures at which orders are taken for shipments upon the opening of the above canals, which will probably be within three weeks.

NEW YORK AND SHIPPING POINTS IN THE VICINITY TO

* Buffalo and Lockport	$1 85	* Utica, N. Y	1 25
* Rochester	1 75	* Syracuse, N. Y	1 35
* Burlington, Vt	1 75	*Oswego, N. Y	1 70
Albany	85	Troy	90

* Alongside.

*Montreal, Canada, gold	$2 75	Ottawa, Canada	3 25
St. Johns, N. B	2 50	Quebec	3 25

* Harbor towing extra

Delaware and Raritan Canal.

Tolls and Towing.

Per ton of 2240 lb.

From New Brunswick to	cents.	From New Brunswick to	cents.
South Amboy, towing only	10	Newark, towing only	20
Rahway, " "	13	Hudson City, "	25
Elizabethport, " "	15	New York, below 53d st.	20

Canal tolls on anthracite from New Brunswick is 25 cents extra.
Canal tolls on bituminous from New Brunswick is 37 cents extra.
Towing from Port Richmond, 7 cents additional.

Fairmount to New York, including tolls	57 cents.
Greenwich " " "	64⅓ "
Trenton " " "	35 "
Port Richmond " anthracite, "	52 "

Tolls on bituminous, loaded at Port Richmond and Greenwich, is 12½ cents per ton extra; other bituminous and semi-bituminous, 25 cents extra.

IRON MARKET REVIEW.

Import Duties.

The following are the duties in Gold on Iron:

Flat iron, not less than 1, nor more than 6 inches wide, nor less than ¾, nor more than 2 inches thick. *Round Iron*, not less than ¾, nor more than 2 inches in diameter, and *Square Iron*, not less than ¾, nor more than 2 inches square ₰ lb. 9-10 of 1c. *Flat Round or Square Iron*, of larger or smaller sizes than the above mentioned, per lb. 1 35-100c

Provided, that all iron in slabs, blooms, loops, or other forms, less finished than bars, and more advanced than pig iron, except castings, shall pay the same as iron does.

Provided, that none of the above iron shall pay less than 31½ per cent.

Railroad Iron	63c. per 100 lb.
Boiler plates, or other plate iron not less than 3-16 of an inch thick, per lb	1 35-100 c.
Scrap castings per ton	$5 40
" wrought " "	7 00
Pig Iron per ton	6 0

Iron ore 10 per cent. *ad valorem*.

New York.

April 10, 1874.

The improved feeling in the iron market noticed in our last has disappeared, and trade for the past week has been exceedingly dull. The feeling in most circles is, that we will ultimately have the proposed increase of circulating medium; but they are disappointed at the present appearances of a delay, by the bill being placed before the Committee of the Whole, where it may be kept an indefinite length of time, and place business interests under the suspense which existed a few weeks ago.

American Pig. The demand is very limited, and, if any thing, prices are a little weaker. Most of the local foundries are not working more than half time, which, with the threatened strikes in the building trade, are not very encouraging. The furnace proprietors claim that present figures show a loss; but speculators are not buying at all, and consumers only for pressing immediate necessities. The inflation measures which were expected to advance prices, appear to have had the contrary effect, so far as the Eastern market is concerned. We learn of two sales of 500 tons each, of forge iron, at $27.00, time and interest; 200 tons Allentown gray forge, at $29, at works; 200 tons No. 2 Foundry, Lehigh Co., at $30, at Hoboken, and 500 tons No. 2 X Foundry for delivery, at $30, at Hoboken. The Thomas Iron Co. is not offering any iron at the present time, as they are sold ahead to such an extent, that it will take until the middle of Summer to work out their orders. Considerable pig can be bought at our lower quotations, while there are those who hold for the higher, but seldom do business. We quote:

No 1, Foundry Anthracite	$34 00@35 00
No. 2, " "	31 00@33 00
Grey Forge	27 00@30 00
White and Mottled	22 00@26 00
Salisbury Charcoal Carwheel	62 00 ....

Scotch Pig. The demand has not improved during the last week; the importations have been light, and stocks are gradually being reduced. The reports from Glasgow show that the market there is very much unsettled; considerable excitement prevails relative to the strikes, and nearly all the furnaces in Scotland are out of blast. It would appear, that with the prospect of a decline in wages, Scotch pig must soon be lower. Glengarnock cannot be counted strictly No. 1 at present, as so many inferior lots are being offered on the market. In another column will be found a circular from Liverpool, bearing date of March 20, and issued by Messrs. E. S. Wheeler & Co., of New Haven, Conn., and Liverpool, Eng. It is a comprehensive review of the Scotch Pig Iron Market for the last three years, and gives some valuable information relative to prices, wages, production, etc. We learn of sales of about 300 tons of Eglinton at $37, with small lots of Coltness, to arrive, at $39; and 50 tons on the spot, at $40. We quote: Eglinton, $36@$37; Glengarnock, $37@$39; Coltness, $39 to $40 on spot, and $39 to arrive.

Iron Rails.—There have been no transactions to note during the last week, excepting an order to the Vulcan Iron Works of St. Louis for 1200 tons of new rails and the re-rolling of 4000 tons of old. Some dealers have better hopes, and anticipate some good orders very soon, while others are quite despondent. Advices from Wales report orders being taken at £9; but we are informed by the branch of a large English house, that a large order could be placed at £8 10s. We quote English at $54@58 gold, and American at $58@62 currency.

Bessemer Steel Rails.—We have no change to report, and learn of no transactions. We quote American at $97 50@ $100 currency, and English quite nominal.

Old Rails.—We learn of the sale of 1000 tons old rails, the particulars of which are strictly private. T's are quoted at $40@41; double-heads and bridge are nominal.

Scrap Iron.—We learn of the sale of 250 tons wrought railroad material; 100 tons scrap steel at 2½c., time and interest, ex store, and two small lots, to arrive, at same figure, cash. We quote wrought at $41@42, and cast at $28@32.

Boston.

April 4, 1874.

The demand for iron continues very quiet, and there has been no material change in prices, though holders are willing to listen to pretty low offers, and sometimes accept them for pig, both Scotch and American. A considerable portion of the 100 tons of Coltness which arrived on the John Boyd was sold to arrive; the balance is still on the market. Refined bar iron is quiet and unchanged.—*Commercial Bulletin.*

Baltimore,

April 4, 1874.

The market for p'g iron is very dull, and we have no sales reported. We quote: Scotch, $40 per ton, from yard; American anthracite No. 1, $33; No. 2, $31; and No. 3, $29.

Chicago,

April 6, 1874.

The demand is light and prices remain unchanged. We quote:

No 1 Summerlee	$51 00@ ....
No 1 Coltness	52 00@ ....
No 1 Glengarnock	50 00@ ....
No. 1 Eglinton	48 00@ ....
No. 1 Lake Superior	45 00@ ....
No. 2 Lake Superior	43 00@ ....
No. 2 Tuscarawas	48 00@ ....
No. 1 Missouri	45 00@ ....
No. 2 Missouri	43 00@ ....
Union "A" 1 (Anthracite)	44 00@ ....
Union "B" 1 (Anthracite)	42 00@ ....

Cincinnati.

April 7, 1874.

Reported by TRABER and AUBERY, commission merchants for the sale of pig iron, blooms, ore, etc.

We have nothing of special importance to note since our last report. The charcoal furnaces in this region being now out of blast, stocks are getting light and good brands are held with considerable firmness. Other descriptions are in ample supply and prices favor buyers. We quote:

CHARCOAL.	
Hanging Rock, No. 1, Foundry	$38 00@39 00—4 mos
" No. 2, "	35 00@37 00—4 mos
" Mill	30 00@32 00—4 mos
Tennessee No 1, Foundry	36 00@37 00—4 mos
Tennessee. No. 2 "	34 00@35 00—4 mos
" Mill	30 00@32 00—4 mos
Missouri, No. 1, Foundry	38 00@39 00—4 mos
STONE COAL.	
Ohio No. 1, Foundry	36 00@37 00—4 mos
" No. 2, "	34 00@35 00—4 mos
Ohio Mill	30 00@31 00—4 mos
Missouri, No. 1, Foundry	36 00@37 00—4 mos
" No. 2, "	34 00@35 00—4 mos
" Mill	30 00@31 00—4 mos
CAR-WHEEL.	
Hanging Rock, C. B.	60 00@63 00—4 mos
Tennessee "	55 00@57 00—4 mos
Missouri "	58 00@60 00—4 mos
Alabama "	55 00@57 00—4 mos
BLOOMS.	
Charcoal	85 00@100 00—cash
SCRAP IRON.	
Cast	1 00@ 1 25—cash
Wrought	1 40@ 1 75—cash
Rails Standard	63@ 65—cash

Cleveland

April 7, 1874.

C. E. BINGHAM & Co., dealers in pig iron and iron ores, report the market as follows:

Our market for pig iron remains quiet, with small demand, and prices are nominally unchanged, although indications point to a decline, especially in mill iron. We quote as follows:

No. 1, Anthracite Foundry	$34 00@35 00—4 mos
No. 2, " "	32 00@33 50—4 mos
No. 1, Bituminous "	34 50@35 50—4 mos
No. 2, " "	33 00@34 00—4 mos
No. 1, Grey Forge Bituminous	30 00@31 50—4 mos
No. 2, Close Grey	29 00@30 00—4 mos
No. 1, Massilon Black Band	37 00@37 50—4 mos
No. B-1 " "	35 00@36 00—4 mos
No. 2 " "	34 00@35 00—4 mos
No. 1, Lake Superior Charcoal	42 00@44 00—4 mos
No. 2, " "	39 00@41 00—4 mos
No. 3, " "	45 00@47 00—4 mos
Nos 4, 5, 6, " "	48 00@52 00—4 mos

Detroit.

April 6, 1874.

Scotch pig, net	$46 00@ ....
Lake Superior pig, No. 1	44 00@ ....
" " No. 2	42 00@ ....

Louisville.

April 6, 1874.

GEORGE H. HULL reports the market as follows:

The market is dull for all grades of metal and prices are unchanged.

The usual time, 4 mos., is allowed on the quotations below:

HOT BLAST—CHARCOAL.	
No. 1 foundry, from Hanging Rock ores	$38 00@40 00
No. 2 " " "	34 00@36 00
No. 1, forge, " "	31 00@32 00
No. 1, foundry, " Tennessee "	35 00@40 00
No. 2 " " "	33 00@35 00
No. 1, forge, " "	30 00@31 00
No. 1, foundry, " Alabama "	35 00@38 00
No. 1, " " Iron Mountain "	41 00@42 00
HOT BLAST—STONECOAL.	
No. 1, foundry, from Missouri ores	34 00@36 00
No. 2, " " "	32 00@33 00
No. 1, forge " "	30 00@31 00
COLD BLAST—CHARCOAL.	
Car Wheel from Hanging Rock ores	60 00@63 00
" " Tennessee "	53 00@55 00
" " Alabama "	55 00@57 00
" " Georgia "	55 00@57 00
" " Missouri "	53 00@57 00
" " Kentucky "	55 00@57 00

San Francisco.

March 26th, 1874.

We are without sales to report, business in all departments being greatly depressed, and in the absence of considerable demand, the price of pig iron is both low and nominal. American and Scotch pig iron is held at $43@45.

Pittsburgh.

April 8, 1874.

Reported by A. H. CHILDS, commission merchant for the sale of pig iron, blooms, ore, &c.:

The increased sales of pig iron during the past two weeks have not thus far resulted in any material improvement in prices. The present condition of trade in manufactured iron is so unsatisfactory that mill owners steadily refuse to pay any advance for metal. Quotations remain unchanged, although prices are perhaps a shade firmer than before. We quote:

No. 1 Foundry, anthracite or bituminous	$32 00@34 00—4 mos
No. 2, " " "	30 00@31 00—4 mos
No. 1, Grey Forge, " "	27 50@29 00—4 mos
No. 2, " " "	27 00@ ....
White and mottled " "	26 00@26 50—4 mos

The Pittsburgh *Commercial* reports the following sales for week ending April 3rd:

IRON MADE FROM LAKE SUPERIOR ORES, SMELTED BY BITUMINOUS COAL.

1000 tons gray forge	$27 00—cash.
1000 tons " "	28 00—4 mos
400 tons cold short	27 50—4 mos
300 tons gray forge	27 00—5 mos
300 tons " "	28 00—4 mos
250 tons foundry	30 00—4 mos
200 tons gray forge, red short	28 50—4 mos
200 tons gray forge	27 00—4 mos
200 tons gray forge, red short	28 50—4 mos
200 tons gray forge	27 00—4 mos
200 tons gray forge	28 00—4 mos
100 tons gray forge	27 50—cash.
100 tons white, and mottled	26 50—4 mos
100 tons gray forge red short	28 50—4 mos
50 tons silvery	24 00—4 mos
30 tons No. 1 foundry	32 00—4 mos
CONNELLSVILLE COKE.	
200 tons gray forge	$28—4 mos
100 tons gray forge, cold short	27—5 mos
60 tons soft silvery	28—4 mos
50 tons white and mottled	25—cash.
30 tons gray forge	27—cash.
ANTHRACITE.	
100 tons No. 2, foundry ex., at furnace	$31—4 mos.
30 tons No. 2, "	32—4 mos.
20 tons No. 1, "	35—4 mos.
10 tons No. 1, "	32—4 mos.
CHARCOAL HANGING ROCK.	
30 tons No. 1, foundry	$40—4 mos.
28 tons No. 2, "	$40@$41—4 mos.

Philadelphia.

April 8, 1874.

During the last week there has been more activity in this market, and prices have been more firm. Dealers are much more hopeful. During the week the sales of forge irons amounted to about 4000 tons, with 2500 tons of rails on long credit and at high figures. In old rails the transactions have been light. We quote:

American No. 1	$34 00@35 00
American No. 2	32 00@33 00
American No. 3	28 00@30 00
Scotch—Glengarnock	39 00@40 00
" Eglinton	38 00@39 00
New rails, at works	60 00@62 00

St. Louis, Mo.

April 4, 1874.

The market for pig iron has been quite dull. The receipts for the week by the various railroads were 1197 tons of pig iron, and 5260 tons of iron ore. The shipments were 890 tons of pig iron and 344 tons of iron ore. The shipments of ore on the St. Louis, Salem and Little Rock railroad increased last week to 1490 tons. We quote:

HOT BLAST STONE COAL PIG.	
No. 1 foundry from Iron Mountain and Maramac ores,	$34@35
No. 2 foundry from Iron Mountain and Maramac ores,	32@33
No. 3 forge from Iron Mountain and Maramac ores,	29@31
No. 1 Massilon,	43@..
No. 1 Tennessee, cold short,	36@..
No. 1 Ohio, cold short,	40@..
HOT BLAST CHARCOAL PIG.	
No. 1 foundry from Iron Mountain and Maramac ores,	36@43
No. 2 foundry from Iron Mountain and Maramac ores,	32@40
No. 1 foundry from Tennessee ores,	35@37
No. 1 forge from Tennessee ores,	31@33
COLD BLAST CHARCOAL PIG.	
Hanging Rock car wheel,	60@64
Tennessee,	58@60
MISSOURI IRON ORES.	
Iron Mountain Co.'s Quotations.	
Iron Mountain, per ton	$8 00
Benton Creek, "	7 50
Surface ores, "	8 00
Red and brown hematites, per ton	5 00@6 50
Pilot Knob, per ton	5 50
Rails, 50 to 60 lb. inclusive	70 00

THE BRITISH IRON TRADE.

LONDON, March 21, 1874.

During the last week there has been a general decline in the prices of iron. In the North of England there has been a very marked decline, the market having been very much unsettled by the failures in Scotland, many of the manufacturers being creditors. In one case, a firm which had booked contracts forward, and provided the raw material, now finds it thrown on their hands. Some of the works have, in fact, suspended operations. The rail orders on hand are being rapidly worked off. In some sections, it is anticipated that there will be a further reduction on quarter 'day, and purchases are only being made for immediate requirements, or subject to the ruling prices established at that time.

The constant falling in prices, and the feeling that they will go still lower, is deterring the placing of important orders, and there is no likelihood of an improvement in the demand, until the labor question and prices are fully settled. A brief strike would have no great effect on the market as the stocks are sufficient to supply the demand for some time. We learn from nearly all the districts, that strikes are occuring or are anticipated, and if they do occur, many furnaces will blow out; in fact, we learn of a number having already damped down or blown out. The Belgian makers are greatly underselling the manufacturers in this country, and it will be necessary that a further reduction, both in the prices of labor and iron, occur, before we will be able to book many orders from those who are now placing them in Belgium. To make a reduction in the price of iron, in many cases, it will be an imperative necessity that there be a reduction of wages, as in the majority of cases it is being manufactured at no profit and in some at a loss. From Sheffield we learn, the Besemer works continue to do well, especially in rails; but the crucible melters are much as they have been for some time past; the hands being on short time, and the proportion of furnaces lighted being not more than two-thirds.

In Wales trade is very depressed. Sales of rails have been effected at a very little above £9. It is expected that there will be considerable Spring trade, but not enough to interfere with the reduction in wages, which may soon be expected.

The following are the leading quotations: at Cleve 3 pig, 70s.; at Newcastle-upon-Tyne, No. 3, 70s.@73s.; and forge, 64s.@67s. per ton, on trucks at the works; at Middlesborough on Tees, No. 3, at 70s.: and No. 4, 67s. 6d.; at Wolverhampton, common cinder pig, £4; "Bradley Bridge charcoal," gray, is quoted at £15; mottled, £15 10s., and white £16; Bessemer pig at Barrow, No. 1, £8; No. 2, £7 17s. 6d; No. 3, £7 15s.; Nos. 4 and 5 ordinary, £7 10s.; mottled and white, £7 5s.; Indian charcoal pigs at London, £10@£12, Rails are quoted in Wales, at £9 5s.@9 15s.; at Middlesbrough on Tees, heavy rails, £9 10s.@£9 15s.; and light section, £10 5s.@10 10s.

Scotland.—Since the date of our last, the warrant market has been very irregular, and prices have fluctuated considerably; but they are now from 5s. to 6s. below those of last week. On Friday, the 13th inst., the market opened at 92s. 6d. @93s., and on Wednesday the market closed at 84s. 6d. The shipments of pig iron from Scotch ports for the week ending the 14th inst., amounted to 10,622 tons, being 1958 tons more than during the previous week, but showing a decrease of 4154 tons on the corresponding week of 1873, and being a total decrease since Dec. 25, 1873, of 35,762 tons, as compared with the same time last year. The imports of Middlesbrough pig iron into Grangemouth for the week were 1460 tons, or 270 tons less than the week previous, although an increase of 11,732 tons for the year.

At the end of last week, Messrs. Watson & Campbell suspended payment. Their liabilities are stated to be upwards of £200,000. It is understood that several of the malleable iron makers are among the creditors, and that the firm has had large transactions in the Warrant Market and Stock Exchange.

Strikes have been most generally inaugurated, and, in consequence thereof, we have reports from Shotts, Castlehill, Coltness, Calder, Wishaw, Carnbroe, Calderbank, Chapelhall, Clyde, Glengarnock, Eglinton, Lugar, Portland and Ardeer, to the effect that most of the furnaces, if not even all that were recently blowing, are now out of blast, or damped down to await the action of the workmen. From one report we learn that during the last three or four days 80 furnaces have been damped down, or nearly two-thirds of the number in blast at the beginning of the month. The miners in a few cases have acceded to the masters' terms, and it is impossible to say how long the remainder can continue out. It is argued that the colliers, from their long high wages, should be in funds just now, and able to fight on advantageous grounds; but such is not the case, as the unfortunate men's watches, and better clothing, and even household effects, are finding their way piece-meal to the pawnbrokers.

Notwithstanding the above-mentioned troubles, the demand for the principal makers' brands has been light and very limited, and prices have declined a little. The malleable iron business is in a very unsatisfactory condition, orders gradually decreasing in number, and there being greater caution among buyers. Finished iron is rather firmer in price this week, but the orders continue of the most trifling description; and although the works manage to keep their machinery in operation, yet the makers hardly know the day before what is to be the character of their work on the morrow. There can be no great change in the iron market until the labor question is settled, as buyers believe there will be a reduction of wages, and that a decline in the price of iron will follow, and they are, therefore, only placing orders for immediate, pressing necessities. The masters are well united, and will likely stand firm in their demand for a reduction. If such should prove the case, with the lack of funds among the workmen, the strike will likely not be of great duration.

The following are the quotations for the various brands of Scotch pig iron, net cash: Coltness, f. o. b. Glasgow, No. 1, 98s.; No. 3, 90s.; Gartsherrie, ditto, No. 1, 95s.; No. 3, 90s.; Langloan, ditto, No. 1, 94s.; No. 3, 87s. 6d.; Calder, ditto, No. 1, 100s.; No. 3, 87s. 6d.; Summerlee, ditto, No. 1, 100s.; No. 3, 87s. 6d.; Carnbroe, ditto, No. 1, 95s.; No. 3, 90s.; Eglinton, Ardrossen, No. 1, 87s. 6d.; No. 3, 85s. 9d.; Glengarnock, ditto, No. 1, 96s. 6d.; No. 3, 90s.

METALS.

NEW YORK, April 10, 1874.

Gold Coin.—During the last week gold has ranged from 113¼ to 113¾, and closed to-day at 113½.

Bullion.—Fine silver bar, 127½@128½ gold, per ounce; fine gold bar, par ($20 67 gold per ounce), to ¼ per cent. premium.

Copper.—Lake is now being firmly held at 25c. There are few buyers on the spot. The stock is estimated at 6,000,000 to 9,000,000 lb. We have no important sales to report since the date of our last. The sale of about 12,000,000 lb. reported in our last, we are informed, is to be delivered between June and September.

Tin.—The market has been very quiet, with nothing of importance to note. The stocks in this country are generally known to be light, but we cannot expect a greatly increased demand until the decline in prices is settled in Europe, and it is believed that they have already reached as low a figure as can be expected. The quotation for common English in London is £90.

Lead.—During the week there has been a decline of ½c,

200 tons domestic sold at 6c. gold. Foreign is quoted at 6⅛@6⅝c. gold, with no transactions; fine foreign, nominally at 7¼c. gold. The latest quotations from London by cable are £21 10s.@£21 15s.

Spelter.—There is very little foreign spelter in first hands. Silesian is nominally quoted at 6⅝@6¾c. gold; Missouri, 7¼c. currency.

Zinc.—The market is very quiet at 8¼@8½c.. gold, for Silesian and Mosselman sheet, and 8¾c. for Western.

Manganese.—Best Pyrolusite, chrystallized, from 80 to 85 per cent., at 7c.; common German manganite, 4½c.; manganite, 75 per cent., 3½c.; Southern psilomelane, 3c.

Quicksilver.—The market remains at the date of our last. We quote at San Francisco at $1 25 per lb., and in this city at $1 33@1 35 per lb.

San Francisco Stock Market.

BY TELEGRAPH.

NEW YORK, April 9, 1874.

We have advices from the San Francisco Stock Board dated the 7th inst. With the exception of a slight decline in Chollar Potosi and Gould & Curry the list has advanced A dividend of $5 per share, has been declared by the Belcher Mining Co. payable on the 10th inst.; the report is as follows :

Savage	86	Imperial	6½
Crown Point	95	Raymond & Ely	27
Yellow Jacket	85	Meadow Valley	11
Kentuck	23	Eureka V G	9
Chollar Potosi	67	Ophir	—
Gould & Curry	30	Hale & Norcross	—
Belcher	85		

Boston Stock Market.

BOSTON, April 8, 1874.

The closing prices for Copper Stocks were as follows :

Allouez	8	Pewabic	8
Calumet and Hecla Co..	138¼	Phœnix	15
Copper Falls	24	Quincy	367¼
Central	28	Ridge	6⅞
Franklin	4½	Rockland	1¾
Mesnard	1	St. Clair	2¼
National	3¾	Star	1¾
Petherick	2½		

American Institute of Mining Engineers.

OFFICIAL BULLETIN.

Announcements to Members and Associates.

I. The ENGINEERING AND MINING JOURNAL, which is the Organ of the Institute, and contains its proceedings, transactions and notices of meetings, will be sent to each Member and Associate on the payment of his annual dues. Back numbers cannot, as a rule, be sent.

II. Dues (ten dollars per annum) are payable on election and at the annual (May) meeting. Members and associates elected at the February meeting pay ten dollars only to May of the following year. Remittances should be made, as far as possible, by P. O. Order, payable to the Secretary.

III. The Council earnestly requests members to forward to the Secretary, for preservation, copies of all printed mining and geological reports, particularly pamphlets, which may fall in their way. It is believed that by this means a large amount of valuable fugitive information concerning different regions and properties in this country, may be caught and preserved.

THOMAS M. DROWN, Secretary, 1123 Girard street, Philadelphia, Pa.

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Nov.1 -1y

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